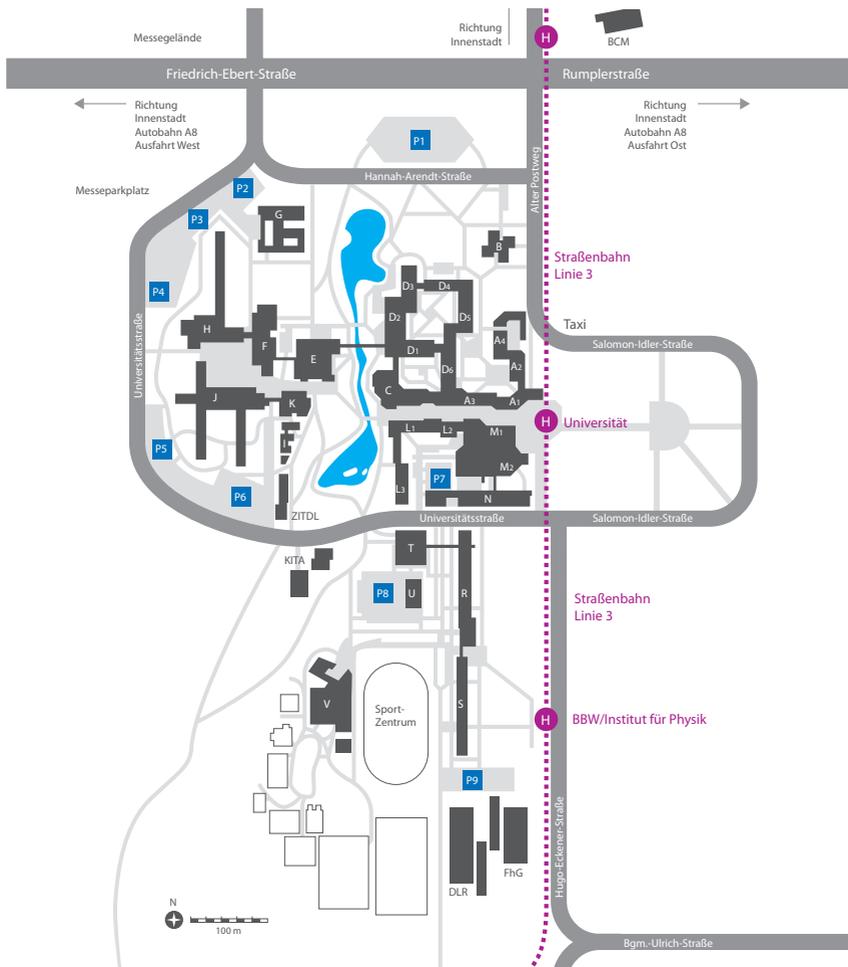


Materials Science

Study Guide

Master of Science (M.Sc.) Program





Key to the Campus Map (relevant buildings only)

A

- Academic and Legal Matters
- Alumni Network (A3)
- Career Service (A3)
- Examinations Office (A1)
- Registrar's Office (A1)
- Student Service Center
- University Executive

E

- Main Library

L

- Institute of Mathematics
- Computer Center
- Natural Sciences Library

M1

- Food Hall & New Cafeteria
- Apartment Service by Studentenwerk

M2

- Student Counselling Services
- International Office

R

- Institute of Physics (Northern Building)
- Institute of Materials Resource Management
- Didactics of the Natural Sciences

S

- Institute of Physics (Southern Building)

T

- Physics Lecturing Halls

V

- Sports Center

Materials Science in Augsburg

Welcome to the Master of Science program in Materials Science at the Institute of Physics at the University of Augsburg.

This Guide will help you during your first semester(s) of your studies in Augsburg, but also contains much useful information right through to the end of the program. You can also find all of the information contained in this guide on our website: http://www.physik.uni-augsburg.de/studium/materialwissenschaften/MaWi_Master/. Naturally, the website might contain more current information than this guide, so please make sure to visit it regularly! Both this guide and the website will refer to additional documentation, both in English and German, which you can access via the website.

Please also refer to the website and the publications of the International Office of the University of Augsburg at <http://www.aaa.uni-augsburg.de>. The International Office provides a wide variety of information and services surrounding your stay in Augsburg, including details on where to find a place to live and how to make the most of your time in Bavaria and at our university.

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What is Materials Science?

What is the Materials Science program about?

Materials Science is an interdisciplinary field connecting several aspects of physics, chemistry, and methods for characterization and processing of materials. The continuative M.Sc. Materials Science program deepens the scientific expertise of your previous education, e.g. the understanding of various material properties and interactions between materials particularly with regard to application oriented research in science and technology. In Augsburg, we put a strong emphasis on the natural sciences (rather than mechanical engineering) in materials science, aiming to provide students with an in-depth understanding of the chemical and physical properties of materials.

The International Master in Materials Science is an academic study program intended to be completed in four semesters. Building on experience from the Bachelor's level, knowledge of materials science is deepened and enhanced, finishing with the completion of a Master thesis and an associated examination. All classes are taught entirely in the English language.

Why choose Augsburg University to study?

The Materials Science program of Augsburg University offers students a broad variety of elective courses to specialize in, like spintronics, porous materials, low temperature physics, nanostructures, and many more. Furthermore, through the corresponding method courses the theoretical knowledge can be enhanced by practical experience.

The program also encourages you to socialize with fellow students from different countries and cultures in an agreeable international atmosphere. Augsburg University assures easy access to the program for foreign students, and enhances the international competitiveness of German students by providing all lectures and courses in English.

Why choose the Master of Science qualification?

The Master's degree provides a professional and qualifying education in material science, and is a certification for enhanced expertise in material sciences, and thus, testifies that the candidate is capable to tackle scientific problems concerning materials independently and efficiently, by using modern methods. Also, the program aims towards well trained graduates to perform organizational, planning, and management duties in research institutes, industry, and public administration.

Requirements for Admission

This section will inform you about the requirements you need to fulfill in order to gain admission to Augsburg University and the Master's Program in Materials Science. Please also take note of the visa requirements for entering Germany as a student (see the relevant section of the International Office website). In certain cases, certain program requirements can be waived. If in doubt, please contact the program coordinator.

General Requirements

To enter a Master's program in Germany, you need

- a Bachelor's degree or equivalent, showing above-average performance (see next section)
- permission to live in Germany (please consult the German Embassy in your country, especially if your country is not in the EU or associated with the EU)

Please make sure you are eligible for both the program and for coming to Germany **before** you apply for the program.

Program-Specific Requirements

For admission to the Master's program in Materials Science, a **Bachelor's degree** (or equivalent) in the fields of materials science, physics, chemistry, or materials science and engineering is required. A degree in a related discipline might be deemed equivalent by the examination board, subject to evaluation of the documents submitted by the applicant.

If, at the time of application, the documentation of your Bachelor's degree is not yet available, a current transcript of records must be submitted and the diploma and associated documents submitted within one year of commencing the Master's program.

All applicants have to submit proof of having obtained at least **16 ECTS credits** in **each** of the following subjects:

- (1) Materials Science,
- (2) Physics,
- (3) Chemistry.

See section "Application Procedure" below for the documents needed as proof.

Language Requirements

Applicants whose first language is not English must provide proof of a sufficient knowledge of English corresponding to level B2 in the Common European Framework of Reference for Languages. Currently, equivalences to B2 in terms of one of internationally recognized test methods (e.g. TOEFL, IELTS) are as follows:

TOEFL (paper-based)	score of at least 550
TOEFL (computer-based)	score of at least 213
TOEFL (internet-based)	score of at least 80
IELTS	Overall Band Score of at least 6.5 (out of 9)

Note: You do not have to submit this proof if you are a native speaker of English or you have graduated from a university where English is the primary language of instruction. In the latter case, please provide supporting documentation.

Knowledge of German is **not** required for the program itself. However, working knowledge of the German language will be very helpful in day-to-day life on and off campus. If you do not speak German at all, it is recommended that you either take a course before you come to Germany or during your first semester in Augsburg. See the website of the International Office for more information.

In particular, working knowledge of German is very important if you plan to get a job in Germany, either part-time during your studies or after you have finished them. This includes positions as a student assistant anywhere on campus, including the Institute of Physics.

Application, Admission and Enrollment

This section will inform you on when, where and how to apply for admission to the International Master's Program in Materials Science. It will also point out what happens after you apply (successfully). See also §4 POMaMatSc.

Dates and Deadlines for the Application

Application is possible both for the winter and summer semesters, although we recommend to start in the winter due to capacity constraints. The winter semester starts in October, the summer semester in April of each year. The exact deadlines for application will be posted on our website. As a rule, you will have to apply about six months in advance. For the winter semester, the application period is until the end of May of the same year. For the summer semester, the application period is until the end of November of the previous year.

Application Procedure

- (1) Fill the application form available from our website (courtesy of the German Academic Exchange Service, DAAD).
- (2) Download and fill the evaluation form "Credit Point Equivalents", available from our website.
- (3) Submit the following documents via regular mail (address below):
 - a. Signed print-out of the application form.
 - b. Signed print-out of the credit point evaluation form, showing 16 ECTS credits in each of physics, chemistry, and materials science.
 - c. Copy (non-certified) of proof of English-language proficiency (TOEFL, IELTS, or equivalent) – not required from native speakers of English.
 - d. Curriculum vitae (CV)
 - e. Certified copies and certified translations into English or German (if not in one of these languages originally) of the following documents:
 - i. University Entrance Certificate (e.g. high school diploma)
 - ii. Recent official Transcript of Records (from Bachelor program)
 - iii. Bachelor Diploma or equivalent (if available)
 - f. Applicants from China, Mongolia and Vietnam: please also include an APS Certificate with your application.
 - g. Two letters of recommendation.

Please send the documents to the following address:

Alexander Hagen
Institut fuer Physik
Universitaetsstr. 1
D-86135 Augsburg
Germany

- (4)** The deadline for submitting these documents is stated on our website. Please allow extra time for postal delivery! Your local post office should be able to advise you on how long a letter usually takes from your location to Augsburg.

Admission

Your application will be considered by the examination committee. This may take up to several weeks. You will then receive both an Email and an official letter of admission from the Registrar's Office stating whether you are admitted, or not. In case you are admitted, please keep the written letter of admission very safe! You are going to need it for a variety of purposes, including your visa (if applicable).

The letter of admission will ask you to fill in an online application form, which will be your formal application for enrollment at the University of Augsburg. Please fill this form diligently within the time period stated in the letter of admission.

Enrollment

Please see the website of the Registrar's Office (*Studentenkanzlei*) for details on how to enrol at the University of Augsburg after arrival in Augsburg. The following is just a brief outline of what to expect. This assumes you have arrived in Germany on a student visa. For nationals of an EU member country, the process is slightly different. Please always refer to the websites of the International Office and the Studentenwerk (student services organization), which have much more detailed information on all these matters!

Please note: According to the law, everybody in Germany (including Germans) needs to register with the authorities of the municipality they live in.

Step 1: You need a residential address in Augsburg in order to enroll. For that reason, the first step is to look for accommodation. You can live in a student dormitory (by German standards, this is a one-room apartment in a specially designed apartment building), an apartment of your own, or with friends/relatives at their apartment/house. You **cannot (!)** live with a friend at a student dormitory or at a hostel/hotel and you will **not** be able to register in the city or enroll in the program as long as you do not have a fixed address in Germany.

Step 2: The second step is to open a bank account. This is necessary because your rent, your health insurance and your study fees have to be paid by bank transfer.

Most banks offer accounts for students at no charge. There is a number of different banks in Augsburg. (We are not allowed to make recommendations.)

Step 3: Health insurance is compulsory in Germany. You need to have proof of either international health insurance (not recommended) or of German health insurance to enroll at university. There is a wide variety of health insurance providers in Germany, many of which have offices in Augsburg. (Again, we are not allowed to make recommendations.)

Step 4: Enrollment at the university (also called matriculation / *Immatrikulation*) is the fourth step. Before you enroll at the Registrar's Office, make sure you have proof of health insurance. Also, do not forget to transfer the current study fee of 96,60 Euros into the university account (please have the transfer slip stamped by your bank and bring it with you as proof). The account details can be found in your letter of admission. In addition, you need to upload a passport-sized picture for your CampusCard (which is your student ID, tram and bus ticket, and on-campus debit card), if you want your picture on it. At enrollment, you will receive any further necessary documents, as well as your CampusCard and *RZ-Benutzerkennung* (Central Computer Login).

Step 5: Apply for a residence permit as soon as possible after completing all the steps above, to make sure you receive your study and residence permit before your visa expires, usually 90 days after you entered Germany.

Coming to Augsburg

There are a few things to keep in mind before you come to Augsburg and during the first few weeks of your stay. This section will outline the most important points. Further information can be found on Materials Science Main and at the International Office.

Finances

In Germany, it is the student's responsibility to secure the finances of their studies. There is no tuition as such, but there are a variety of expenses to be covered, such as the study fee, health insurance, your rent and, last but not least, your general living expenses. All in all, you will need **a minimum of €700 per month** (approx. \$950 US).

Depending on your non-academic qualifications and the level of German you know, it can be hard to find a side job, even within the university. Most of these jobs require a good command of German. Also, because of the strict labor laws, temporary and/or unskilled jobs are comparatively few and far between in Germany.

Please also note that grants of any sort may not be readily available. In general, these are available only to highly qualified applicants and under exceptional circumstances.

Another way of supporting our students is through part-time teaching or research assistantships. There are only a few (!) of these jobs available, but again most of these jobs require a very good knowledge of German. You will have to look for them yourself once you are here. **We do not assign teaching and research assistantships beforehand!**

Accommodation

As mentioned before, you need accommodation in order to enroll at the university. Therefore, it is important to look for a place to stay as soon as possible, ideally before you arrive in Augsburg.

Please keep in mind that there is no on-campus housing as such and that you are in competition with many other first-semester students also seeking a roof over their heads! The easiest place to stay is student housing; by German standards, this is a self-contained one-room apartment in a large block of flats build for the purpose. The main provider of student housing is the Studentenwerk (student services organization), who also offer a so-called service package for international students that basically consists of an apartment for the first semester (see Links section at the end of this guide).

Apart from that, there are many other ways of finding accommodation – see the pages of the International Office for details. Also, note that accommodation outside student housing is usually not furnished.

Planning Your Arrival

Classes usually start within the first half of October in the winter semester and the first half of April in the summer. The exact dates are given on the web pages of the registrar's office, at "Termine" (dates). In order to acclimatize (in the cultural sense), to move into your accommodation and to deal with a variety of administrative issues, it is highly advisable to arrive two or three weeks before classes start. Not only will settling in be easier, but you will also have the opportunity to get to know your new environment a little without having to worry about classes.

Of course, the date of your arrival depends on many factors, not least whether or not you have been able to arrange for a place to stay. Especially if you haven't been able to arrange the latter, it can help to arrive as early as a month in advance. Also, especially in September (before the start of the winter semester), there are quite a few special opportunities offered for international students, including German language courses. Also, during the week before classes start there are usually lots of different orientation meetings, both by the International Office and the Institute of Physics.

German Language Courses

While not strictly a part of the program in Materials Science and certainly no requirement for it, you can still get to know the German language while you are in the program. In fact, knowledge of German will help you very much on the German job market and may also help with getting an internship or an opportunity to write your thesis in a German company.

One opportunity are the courses offered by the language center of Augsburg University (so-called "Deutsch als Fremdsprache") – see their web page. These courses are offered free of charge to all students enrolled at Augsburg University.

Another opportunity are external providers; please refer to the International Office for help.

The Academic Year at the University of Augsburg

Beginning of the Winter Semester	1 Oct
Beginning of Classes in the Winter Semester	Monday around 15 Oct
Christmas Break	24 Dec – 6 Jan
Registration Period for Exams	early January
End of Classes in the Winter Semester	Saturday after 30 Jan
Registration Period for Repeat Exams	mid-March
End of the Winter Semester	31 Mar
Beginning of the Summer Semester	1 Apr
Beginning of Classes in the Summer Semester	Monday around 15 Apr
Registration Period for Exams	early June
End of Classes in the Summer Semester	Saturday after 10 Jul
Registration Period for Repeat Exams	mid-September
End of the Summer Semester	30 Sep

See Wikipedia for public holidays and other dates. The registrar's office also offers a timetable for each semester here: <http://www.uni-augsburg.de/de/einrichtungen/studentenkanzlei/termine/>.

The Program

Overview

The International Master in Materials Science is an advanced academic study program intended to be completed in four semesters (120 ECTS credits). Building on experience from the Bachelor's level, knowledge of materials science is deepened and enhanced. All classes are taught entirely in the English language. It is possible to gain practical experience via internships with a variety of companies in the Augsburg region. The program finishes with the completion of a master thesis, consisting of independent research in one of our labs or with a company, and a thesis defense. The title conferred is a Master of Science (M.Sc.).

The program is governed by the Examination Regulations for the Master Program Materials Science of 20 November 2013 (*Prüfungsordnung für den Master-Studiengang Materials Science; POMaMatSc*). For legal reasons, these regulations are only available and valid in the German language. This guide follows the regulations closely, giving you the most important facts from them. In case of doubt or ambiguity, the examination regulations supersede this guide as well as any other sources of information. A link to POMaMatSc can be found on materials science main.

Program Duration, Extensions

The regular duration of study for the Master's program in Materials Science is four semesters / two academic years of full-time study. During that period, you will be expected to obtain 120 ECTS credits, including your master thesis and defense (see §5 POMaMatSc).

The regular duration may be exceeded by two semesters, for a maximum total duration of six semesters, without penalty or prior approval. Further extensions can only be granted by the examination board and will only be granted under special circumstances, such as illness (as substantiated by a medical certificate; see §17 POMaMatSc). If you need an extension, contact your study coordinator well in advance!

Curriculum

The program consists of the subjects and areas of study outlined in the table below, also showing the contact hours and amount of ECTS credits (CP) associated with each area of study (see §6 and §16 POMaMatSc).

Group of Modules	Area of Study	Cont. Hrs.	CP
1a	Basics of Materials Science I	8	12
1b	Basics of Materials Science II	4	6
2	Methods of Materials Science	12	16
3	Conducting and Presenting Scientific Work	10	14
4	Materials Science – Major Area	16	24
5	Materials Science – Electives	12	18
6	Finals (Thesis and Colloquium)	-	30

For your major area, you can choose one of the following options:

- Chemistry of Materials
- Physics of Materials
- Engineering of Materials

Note that the contact hours (approx. 62 in total) do not reflect the workload needed to obtain the credits for the respective modules (let alone good grades). You may expect to invest an average of 30 working hours per ECTS credit point (CP).

Note, also, that your final grade will be a weighted average of the individual grades obtained in each module, weighted to the ECTS credits obtained for the module. A passing grade in any module will result in full credit points awarded for the module, a failing grade will result in zero credit points awarded – you will have to repeat the exam for that module or retake the entire module (details below).

Recommended Timetables

In the course of the program, compulsory modules and elective modules must be completed successfully, for a total of 120 ECTS credits, including the Master thesis. Compulsory modules cannot be replaced with alternatives (see §16 POMaMatSc). The recommended curriculum and sequence of courses is as specified below.

Note that not all courses listed are offered each semester. This is especially true if you start in the summer semester, since the program is geared for starting in the winter semester due to capacity constraints. Within certain limits, you are free to shuffle courses to suit your needs. If in doubt whether a class is suitable for you, please talk to your study coordinator or directly to the lecturer of any advanced class you wish to take earlier than specified. They will be happy to discuss your schedule with you and give you hints on which class to take! As a general rule, make sure to aim for 28-34 ECTS credits (CP) in each semester.

1st Semester

		CH	CP	Type
1	Materials Physics	4	6	L
2	Materials Chemistry	4	6	L
3	Surfaces and Interfaces or Chemical Physics 1	4	6	L
4	Seminar	2	4	S
5	Method Course 1	6	8	L + P
Total:		20	30	

2nd Semester

Focus: Chemistry of Materials:		CH	CP	Type
1	Chemical Physics 2	4	6	L
2	Coordination Materials	4	6	L
3	Advanced Solid State Materials	4	6	L
4	Solid State NMR Spectroscopy and Diffraction	4	6	L
5	Porous Functional Materials	4	6	L
6	Oxidation and Corrosion	4	6	L
4 out of the 6 lectures in this focus area		16	24	
7	Method Course 2	6	8	L + P
Total:		22	32	

or alternatively

Focus: Physics of Materials:		CH	CP	Type
1	Magnetism	4	6	L
2	Physics and Technology of Semiconductor Devices	4	6	L
3	Dielectric and Optical Materials	4	6	L
4	Biophysics and Biomaterials	4	6	L
5	Nanostructure/Nanophysics	4	6	L
4 out of the 5 lectures in this focus area		16	24	
6	Method Course 2	6	8	L + P
Total:		22	32	

or alternatively

Focus: Engineering of Materials:		CH	CP	Type
1	Functional Polymers	4	6	L
2	Fiber Reinforced Composites: Processing and Materials Properties	4	6	L
3	Characterization of Composite Materials	4	6	L
4	Introduction to Mechanical Engineering	4	6	L
5	Non-Destructive Testing	4	6	L
6	Modern Metallic Materials	4	6	L
4 out of the 6 lectures in this focus area		16	24	
7	Method Course 2	6	8	L + P
Total:		22	32	

3rd Semester

Electives		CH	CP	Type
1	Special Lecture 1	4	6	L
2	Special Lecture 2	4	6	L
3	Special Lecture 3	4	6	L
4	Laboratory Project	8	10	P
Total:		20	28	

4th Semester

		CH	CP	Type
1	Master Thesis (time on project: six months)	-	26	-
2	Colloquium (thesis defense)	-	4	-
Total:			30	

In all of the tables above, 'CH' (contact hours, *Semesterwochenstunden*) stands for the contact hours you will spend in the classroom or lab each week of the term and do not include the total study time you will need in order to pass the course. In Germany, as elsewhere, one contact hour actually only consists of 45 minutes of classroom time. 'CP' (credit points, *Leistungspunkte*) stands for the number of ECTS credits awarded for the completion of the module. 'Type' refers to the type of course associated with the module (see table below; see next section for details on each course type).

CH	Contact Hours (1 CH = 45 min.)
CP	Credit Points (ECTS credits)
L	Lecture
S	Seminar
P	Practical Course / Lab Course

In the second semester, there is a choice of one out of three focus areas: Chemistry of Materials, Physics of Materials and Engineering of Materials. All modules in the chosen focus area are mandatory. The 'special lectures' in the third semester consist of elective courses, either from your chosen focus area or from any of the other focus areas, or classes taught in other areas.

Note that most of the courses recommended for the second and third semesters are usually offered in either the winter term or the summer term only. Therefore, it is highly recommended to attend courses in both your chosen focus area and the elective modules in both your second and third semester.

During your final semester, you will complete and defend a master thesis, see below for details.

Choosing Courses (each semester)

The individual courses offered in any given semester are posted online. One way to find courses for the program is to check the handbook of modules (*Modulhandbuch*)

for the program, which is published each semester, roughly a month before classes start. The link can be found on the website. The handbook of modules describes each module (see also the section on modules below) and provides a listing of courses offered for any given module.

A more convenient way to find courses to attend is the Annotated Course Catalogue (*Kommentiertes Vorlesungsverzeichnis*), also to be found on the website, which lists the courses offered in any given semester and usually also gives the module(s) any given course is intended for. The date, time, and location of the course will also be listed there, as well as the teacher, the course outline, and a selection of course readings.

Note that part of the fun of studying in Germany is to find your courses yourself and compose an individual timetable. This can be very challenging at first, even for German students who are more used to this system. If you are at all unsure of how to proceed, please do not hesitate to contact the program coordinator or the teacher(s) of the class(es) you are interested in, or your fellow students. You will soon grow accustomed to the procedure!

Course Types

In the master's program Materials Science, most classes are taught in the form of lectures. Only a few courses are conducted in other formats. This section will explain what to expect and what is expected from you.

Lecture

A lecture is taught by a professor or lecturer. Usually, he or she will do what the name says. That is, he or she will give a lecture on the given subject in each class, in the form of an academic paper or presentation. You will be expected to listen and take notes, but also to follow the lecturer's thinking and ask questions accordingly. It depends on the style and preferences of the lecturer whether there is more interaction or less. Generally speaking, sensible questions that pertain to the subject matter of the lecture are very much encouraged and will not go unanswered, so don't hesitate to ask! Also, don't be afraid that any of your questions might reflect badly on yourself or the lecturer. To think analytically and reflect critically on what you learn is an integral part of German academic culture.

Many lecturers use either the blackboard or the slide projector in the lecturing hall – it is advisable to take down what they put there, since it will likely come up in the exam. Some lecturers will also use digital presentations (PowerPoint, etc.), but may or may not put the materials online later on. Please make sure to find out whether the lecturer makes his or her materials available or not and take notes accordingly!

In some lecture courses, but by no means in all, there is also a textbook or a selection of readings for a lecture course. You are not required to read them before class, but it is highly recommended. Also, the final exam for the lecture / module will likely be based on these texts. Generally speaking, however, German professors

tend to prefer to use their own materials in lectures and do not completely rely on a single textbook even in introductory courses.

In the Institute of Physics, a lecture course typically consists of 4 contact hours of 45 minutes each week, usually split into two 90-minute classes on two days of the week. You will need to attend both classes each week. Occasionally, there may be an added tutorial (*Übung*) to a lecture, which is not mandatory. This will be announced by the lecturer in the first class of the lecture course.

In method courses, also listed as lectures, you will be expected to interact more with the lecturer and your fellow students, since you are expected to understand and use the methods taught there independently. Typically, a method course is held on one day of the week and consists of 2 contact hours of classroom instruction and 4 contact hours of lab work.

Written exams at the end of the semester are the preferred mode of examination for lecture courses, but there may also be oral exams, or term papers, or even classroom presentations. You will be advised at the beginning of the semester (usually in the first class) what the exam is going to be. See also the section on examinations below.

Seminar

Seminars are based on discussion and interaction. Usually, there is a set text or topic for each class. Often, there are presentations or working papers by students that are presented and discussed in class. The teacher will introduce and guide the discussion, but you are expected to contribute. A seminar is typically 2 contact hours, or 90 minutes, scheduled as one class per week.

Usually, a seminar will have a written term paper as the final exam, but the exam may also be a classroom presentation or simply attendance. See section on examinations below.

Practical Course / Lab Course

Lab courses are conducted in one of the labs of the Institute of Physics. They consist of guided research on the lab's topic or project.

You will be required to submit work reports and/or a written term paper as part of your lab course. There may also be a practical or oral examination. See section on examinations below.

Modules

At German universities, Bachelor's and Master's programs are organized in so-called modules. Each module consists of one or more course(s) and finishes with a final examination. In the Materials Science program, modules are designed such that they usually only consist of one course per module, so the examination in such a module only draws from this one course and is usually held as part of this course.

Most modules are graded; see grading scale below. You will also be awarded ECTS credits for each module, independently from the grade you achieve. If you obtain a passing grade (equal or better than 4.0), full credits will be awarded for the module. If you fail, you will receive no credits at all and you will have to re-take the module or at least repeat the exam (see §13 POMaMatSc).

Note that you are not allowed to repeat examinations or modules that you have already passed and received credit for!

A definitive listing of all the modules in the program is posted as part of the examination regulations (§16 POMaMatSc) and, much more extensively, as the so-called handbook of modules (*Modulhandbuch*). The handbook of modules is published each semester and posted on the university website (a link is provided on Materials Science Main). It includes detailed administrative data on each of the modules, but also gives an outline of the contents of each module and lists the courses offered for that module in the semester in question.

Exams

In the course of the program, you will sit a fair number of exams of a variety of different types (see §11 POMaMatSc). In this section, you will get a general idea of what these exams look like, but the precise mode in which an exam is set (within these categories) is up to the person setting the exam (see also §12 POMaMatSc).

written exam (Klausur)

This is a written examination that may take between 60 and 240 minutes. Typically, a lecture course of 4 contact hours will be followed by a written exam of 90 minutes, which will cover the entire content of the lecture course, unless the lecturer has specified otherwise. The type of questions (multiple choice, calculations, text answer) depends on both the content of the lecture and the lecturer's preference. Usually, there will be hints in the last class, or there may be old exam questions for you to review.

oral exam (Mündliche Prüfung)

This is an oral examination of 20 to 60 minutes duration, conducted by an examiner and an observer. It is highly advisable to ask the examiner well before the exam date about the content of the exam and the type of questions to expect. If no specific announcements are made in class, please go see the examiner in his or her office hours. Sometimes, you may be asked to propose your own topic(s) for the exam, in the form of a thesis statement. This, too, should be discussed with the examiner well in advance.

work report (Praktikumsprotokoll)

In the work report, you will have to elaborate on the practical work and the analysis of the results obtained in practical and lab courses. Size and scope of the report

depends on type of course, as well as the teacher's preference. You will be informed in the first class what the requirements will be.

classroom presentation (Referat, Seminarvortrag)

This is an oral presentation in the classroom of 30 to 90 minutes duration on a topic which you agreed on with the examiner. The style of the presentation depends a little on the content and your and the teacher's preferences. In general, however, a short version of an academic presentation, such as you would give at a conference, will be expected, including a handout giving your theses, structure, and sources.

attendance (Anwesenheit)

Some modules / courses may require regular attendance to obtain a passing grade. You may miss up to 20% of the classes in any given course without penalty or need for justification. You may miss additional classes, but only for valid reasons, such as illness. In such cases, speak to your teacher as soon as possible.

This is not an examination in the usual meaning of the word (i.e. there is no test of your knowledge), but you still need to register for this 'exam' in order to obtain credits for the module (see next section).

Registration for Exams

You will have to register for all exams via the campus-wide online examination and grade registration tool, STUDIS. You can find the STUDIS platform here: http://www.uni-augsburg.de/einrichtungen/pruefungsamts/studis_fuer_studierende/ (this link is also provided on Materials Science Main). You may only register during certain (short!) periods of the semester, usually in January for the exams of the winter semester and in June for the exams of the summer semester. The exact dates will be communicated via Email and are also posted on the STUDIS web portal.

If you miss or fail an exam, there is usually a repeat exam within six months (see §18 POMaMatSc). You will also need to register in STUDIS for these repeat exams. There is a separate short registration period, usually in mid-March and in mid-September. Passed exams cannot be re-taken. In order to gain approval for an extension to the duration of your studies, it may be necessary to provide proof that any missed exams are not your fault, e.g. by means of a medical certificate.

STUDIS is also the place where you can review your grades, as soon as your professors have marked your exam and registered the grades in the system. To keep track of your grades is your own responsibility (see §13 No.5 POMaMatSc).

Grading Scale

At German universities, this grading scale is used (see also §13 No.4 POMaMatSc):

letter grade	number grade	rating
very good (<i>sehr gut</i>)	1.0 or 1.3	performance that deserves special recognition

good (<i>gut</i>)	1.7 or 2.0 or 2.3	above average performance
satisfactory (<i>befriedigend</i>)	2.7 or 3.0 or 3.3	performance that meets average requirements in all respects
sufficient (<i>ausreichend</i>)	3.7 or 4.0	performance that meets average requirements, but has significant weaknesses
fail / insufficient (<i>nicht ausreichend</i>)	4.3 or 4.7 or 5.0	performance that fails to meet requirements

As shown in the table, only so-called ‘third grades’ are used, referring to third parts of integer grades. The decimals in between may be calculated, but are always rounded mathematically to the nearest third grade. The pass mark for all university examinations is 4.0, which corresponds to a percentage grade of 50%. From there, the following conversion to percentage grades can be computed:

very good (1.0, 1.3)	good (1.7, 2.0, 2.3)	satisfactory (2.7, 3.0, 3.3)	sufficient (3.7, 4.0)	insufficient (4.3, 4.7, 5.0)
100% - 90%	90% - 80%	80% - 65%	65% - 50%	less than 50%

This is only an estimate; actual conversion and/or transfer of grades may differ significantly from this and is at the discretion of the institution recognizing the grades.

For the overall grade of the Master’s degree, a weighted average of your grades over the entire course of studies will be computed, weighted to the ECTS credits (CP) awarded for each module. There are 120 CP in total in the entire program, so the grade obtained in a module in which 6 CP are awarded is 6/120 or one twentieth of your overall grade. Your overall grade will be computed to two decimals, dropping (not rounding!) any further digits. Thus, a 2.5367 will show as a 2.53 on your certificate.

Academic Standards

The University of Augsburg is a community of scholars dedicated to learning, teaching, and research. This community follows an unwritten, but nevertheless valid code of academic integrity that stresses principles of honesty, trust, respect, fairness and responsibility. The reputation of any discipline, any program and, ultimately, the degree you achieve at the University of Augsburg is damaged when the rules of academic integrity are broken. The quality and integrity of academic work at the master’s level is paramount in achieving success and dishonesty in any scholarly activity will not be tolerated (see also §14 No.2 POMaMatSc).

In particular, plagiarism is an offence against the code of academic integrity that will not be tolerated. Plagiarism is commonly defined as “presenting, whether intentional or not, the ideas, expression of ideas or work of others as one’s own”. As a graduate university student in Germany, you are expected to use your own critical and analytical skills in developing academic arguments and presenting ideas. This also holds true for any experiments or other practical research you conduct. When using someone else’s ideas, theories, experiments, data or work, you must ensure that you cite the author appropriately.

Similar rules apply to collaborative work – if you work on any assignments in a group, especially as part of a lab project, make sure the work of each individual group member is clearly recognizable and that any use of another group member's work is credited properly. If you are unsure what this entails, please speak to your instructor!

Offences against these standards of academic integrity are treated very seriously. Penalties may include failure of a course or module or expulsion from the program and the university.

Master Thesis and Defense

The master thesis is an independent scientific report carried out within one of the working groups (Lehrstühle) of the Institute of Physics, over a time frame of six months. The thesis will be supervised by a faculty member of the Institute of Physics and can be started as soon as 72 ECTS credits have been awarded as part of the program (see §19 POMaMatSc on all matters regarding the finals). The thesis takes the form of a written academic paper, in either the German or the English language. An external thesis (i.e. one written as part of a research internship with a commercial organization) will still need to be supervised by a faculty member.

It is advisable to find a supervisor for the thesis well in advance. According to German standards, a master thesis constitutes an independent piece of research and after you agreed with your supervisor on the topic it is expected that you conduct the necessary research and present your results in a well-written scientific paper. Your supervisor will be glad to help you choose and finalize your topic and thesis statement.

Possible thesis topics are sometimes posted on the web pages of the supervisor or on bulletin boards near the professor's office. Alternatively, the heads of the working groups or the program coordinator may be able to help you with finding a topic.

Formally, the topic you and your supervisor have agreed on will then be set by the examination board and issued to you. This is done by means of a form that is available for download from the web page of the examinations office or from materials science main.

The thesis needs to be submitted within six months after the topic has been set. Upon written request, this period can be extended by a maximum of an additional 8 weeks, if there are valid reasons (e.g. illness) and the supervisor supports the extension. Late submission of the thesis will result in a 'failed' grade.

You will need to submit *three* copies of your thesis at the examinations office within the deadline that has been set you.

The thesis is evaluated by two examiners, usually the supervisor and an additional faculty member. If a master thesis is graded 'failed' or submitted late, it can be repeated once, but a new topic will be issued. The master thesis will be evaluated and graded within six weeks of submission (see §20 POMaMatSc).

Typically four to six weeks after submission, a thesis defense (colloquium) will be held, which takes the form of an oral exam. In the colloquium, the student shall present the essential features of her/his thesis in a presentation of about twenty minutes' duration. The student shall then be ready to answer questions asked by the supervisor and an additional examiner, both covering and going beyond the topic of the thesis. The entire length of the colloquium is about 50-70 minutes.

Transfer of Credits

Transfer of credits is at the discretion of the examination board (see §9 POMaMatSc). Should you wish to transfer any grades into the master's program, please see the program coordinator. He or she will be able to supply you with the necessary forms and will also give you advice on which credit can be imported into which module. The forms are also available from the examination office's web site and from materials science main.

Please note that any request for a transfer of credits needs to be supported by appropriate documents showing the credits you wish to transfer. Note, also, that credits cannot be transferred into modules you have already failed.

Final Exams / Final Grades

There are no final exams as such, other than the thesis and its defense. The final grade of the program is a weighted average of your grades over the entire course of studies, weighted to the ECTS credits awarded for each module. There are 120 CP in total in the entire program, so the grade obtained in a module in which 6 CP are awarded is $6/120$ or one twentieth of your overall grade. The master thesis and its defense are part of the program and count as one fourth (30 CP out of 120 CP) of your final grade. Your overall grade will be computed to two decimals, dropping (not rounding!) any further digits. Thus, a 2.5367 will show as a 2.53 on your certificate (see §21 POMaMatSc).

Once you have completed the program, you will be issued a diploma and a certificate for your Master of Science (M.Sc.) degree, as well as a Transcript of Records and a Diploma Supplement that situates your degree within the German and European system of education (see §22 POMaMatSc). Please note that these documents are not issued automatically. You will need to request the issue of your final examination documents by means of a form, which can be downloaded from the examination office's web site or from materials science main, and which needs to be submitted to the examination office.

Study Resources

Facilities

The physics department is situated on the southern part of the university campus, in buildings R, S, and T. Building T contains most of the lecture halls and seminar rooms. You will be introduced to the various labs of the department when the need arises.

The physics department also has a student committee, who are always a good source to turn to if you have any questions or simply want to meet fellow students outside of the classroom: <http://www.uni-augsburg.de/studium/vertretung/fsphysik/>.

In addition, there is what is called an open physics room: http://www.uni-augsburg.de/de/studium/vertretung/fsphysik/studium/offener_physikraum.html. This room is staffed by experienced students who will offer help and advice on solving exercises, especially on the basic courses.

Library

The library for the Natural Sciences is located in the mathematics building, building L. The entrance is from beside the lake.

The hours are: Mon-Fri 8:30-24:00h
 Sat 9:30-24:00h
 Sun 12:00-18:00h

At the back of the library (through the steel doors), you will find a few rooms for quiet work and group work.

For further information, please also see the main library web site at <http://www.bibliothek.uni-augsburg.de>.

Online Resources

Materials Science Main: http://www.physik.uni-augsburg.de/studium/materialwissenschaften/MaWi_Master/

Handbook of Modules: http://www.uni-augsburg.de/de/einrichtungen/pruefungsamt/Modulhandbuecher/math_nat/Materialwissenschaften/Materialwissenschaften_Master/

Examination Regulations (POMaMatSc): http://www.zv.uni-augsburg.de/de/sammlung/download/1_Rechtssammlung_neu/1_Satzungsänderungen_mA/MNF/Studiengaenge/Master/Materialwissenschaften_Materials-Science/M-420-1-3-000mA.pdf

Examinations Office: <http://www.uni-augsburg.de/de/einrichtungen/pruefungsamt/>

International Office: <http://www.aaa.uni-augsburg.de/en/>

Accommodation: <http://www.aaa.uni-augsburg.de/en/incoming/living/>

accommodation/

Finances: <http://www.aaa.uni-augsburg.de/en/incoming/degree/financing.html>

STUDIS: http://www.uni-augsburg.de/de/einrichtungen/pruefungsamts/studis_fuer_studierende/

Language Center: <http://www.sz.uni-augsburg.de>

Library: <http://www.bibliothek.uni-augsburg.de>

Registrar's Office: <http://www.uni-augsburg.de/de/einrichtungen/studentenkanzlei/>

Research Guidelines

A very comprehensive guide to the principles of conscientious research as it is conducted in Germany can be found here: <http://www.dfg.de/sites/flipbook/gwp/> (in both German and English). We especially recommend you familiarize yourself with the recommendations laid out in section 1, as far as they are relevant for your studies and research.

Help and Advice

FAQ

Do I need to be able to speak German for choosing this program?

No, all modules are in English. But, of course, getting along in a German city will be easier, if you know some basics of the German language. If you plan to work in Germany, German language skills are essential. There are German language courses offered both at the university and by external providers.

Will I get a grant or a scholarship?

Grants for international students are scarce. Please see Materials Science Main for information, but be aware that grants from German sources are extremely limited and available only to highly qualified applicants and under exceptional circumstances.

Will I be able to work while studying?

Legally, you are able to work for up to 90 full days or 180 half-days per calendar year while enrolled at a university. Note, however, that jobs suitable for students can be hard to find and that you need a good working knowledge of German in order to find a job. This includes student assistant positions at both the Institute of Physics and elsewhere on campus.

When do I need to arrive in Augsburg?

It makes sense to come to Augsburg at least two weeks before classes start, or even earlier than that if you still need to find a place to stay. See section “Planning Your Arrival” in this guide.

Will I be offered accommodation on campus?

No. There is none. On-campus accommodation is not how German universities work.

Where will I live while in Augsburg?

There are many opportunities, either in dedicated student housing or in a regular apartment or a shared apartment. See section “Accommodation” in this guide.

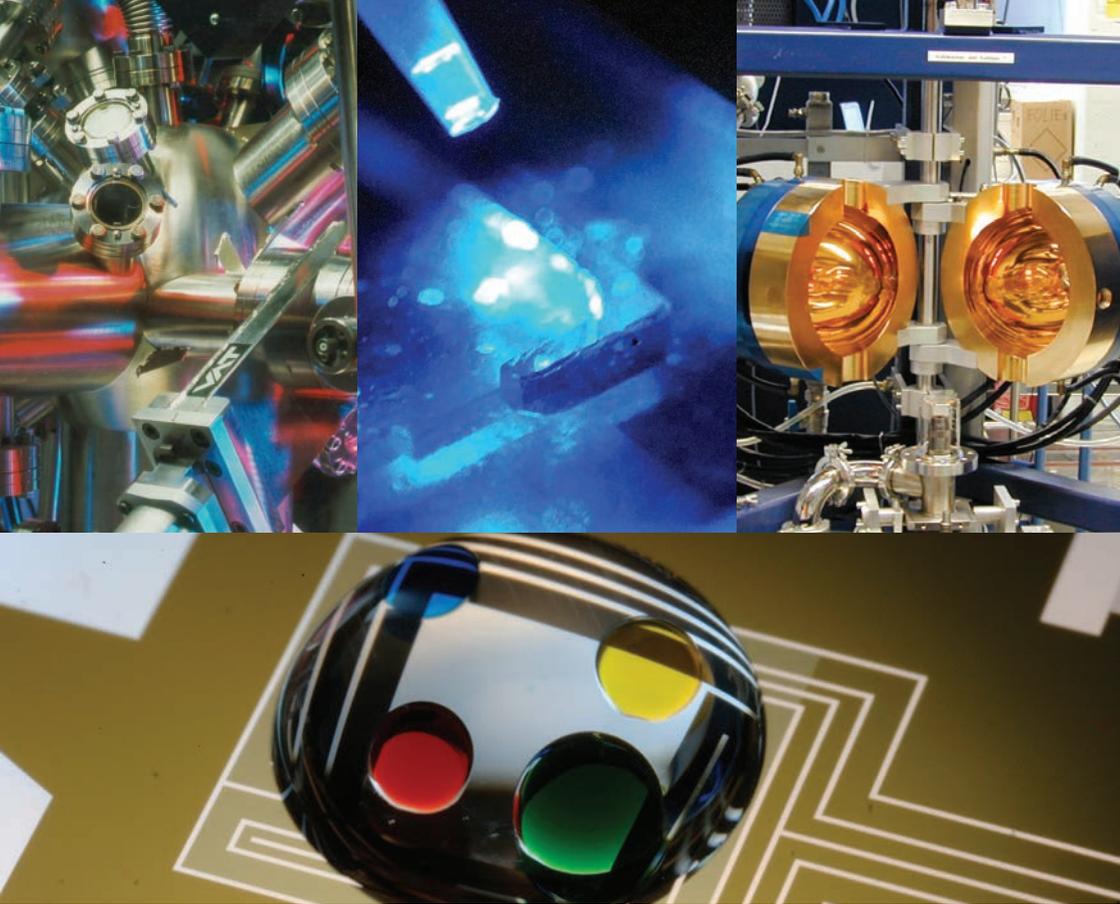
Can I learn German while I study in Augsburg?

Of course! There are courses offered by the language center (no charge, but may collide with courses in the programme) and by a variety of external providers. See section “German Language Courses” in this guide.

Who to turn to for help

Regarding any academic questions or any problems that are related to the program and your studies, you can always ask your teachers and/or the program coordinator (all of whom have office hours posted online and at the doors of their offices).

If you have questions regarding your stay in Augsburg, living in Augsburg, or questions about the not strictly program-related side of your studies, contact the International Office.



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