



Applying for Doctoral Studies at

RWTHAACHEN
UNIVERSITY

Information for prospective PhD Students
with Non-German Academic Degrees

www.rwth-aachen.de/international



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Introduction and Overview

RWTH Aachen University is a prestigious, internationally recognised research university with a special focus on engineering, computer science, and the natural sciences. These fields of study are complemented by subject areas such as medical studies, economics and business studies as well as degree courses in the social sciences and the arts and humanities; special emphasis is placed on a strong interdisciplinary relationship between the latter study programmes and the engineering and natural sciences. Importantly, teaching and research at RWTH are characterised by a combination of theory and practice, and the university has excellent contacts to business and industry.

All faculties of RWTH Aachen University have the right to award doctoral degrees.

Well-qualified international applicants for PhD positions are always very welcome at our university. As the characteristics of doctoral study programmes vary from country to country, it must be noted that PhD projects at RWTH are likely to follow quite different models than doctoral study programmes elsewhere – postgraduate education in the United States, for instance, is quite different from what you can expect as a PhD student at a German university. Therefore, it is highly advisable for interested students to take a close look at the conditions and opportunities offered by our university. The present brochure is intended to provide you with extensive information on what it means to study for a research degree at RWTH Aachen University. In the second part of the brochure, you will be given some tips on creating your application, which are to help you along the way so that your application stands the best chance for success.

Once you have been accepted into the PhD programme, you should refer to the brochure “Research and Work at RWTH Aachen University”, which will give you further information on how to proceed. The brochure can be obtained from the International Office, and it is also available for download on our website (www.rwth-aachen.de -> International)

In what follows, a short overview of the contents of the present brochure shall be given:



In the first chapter you can find a summary of the essentials of undertaking a PhD project in Germany, the emphasis is placed on the special characteristics of doctoral studies at RWTH Aachen University.

If you take a close look, you will find that the PhD projects conducted at our university may be quite different in character. In order to give you a detailed picture of PhD opportunities at RWTH, we will outline for you four typical models which will be described in detail in *Chapter 2*.

The organisational units responsible for issues relating to doctoral studies at our university are the faculties. General information on the faculties and their responsibilities can be found in *Chapter 3*.

A higher education degree obtained outside of Germany must be recognised by the German educational institution: this is a formal entry requirement for a PhD programme at RWTH Aachen University and also a prerequisite for employment at the university. More information on this matter is given in *Chapter 4*.

General information on funding opportunities for your PhD project is provided in *Chapter 5*.

The first important step for you as a prospective doctoral students is to find a supervisor for your PhD thesis. In order to assist you with making a good choice and writing a successful application, *Chapters 5 and 6* provide you with a number of tips that will help you with these issues.

At first, however, you should ask yourself whether a PhD project makes really sense for you and whether you have the necessary vocational skills and personality traits. In *Chapter 6* you find a list of questions for you to think on and answer before deciding on whether or not to embark on a PhD project.

Finally, *Chapter 7* offers some tips on how to choose and contact the prospective supervisor of your PhD thesis.

In addition, you find a brief glossary of important German terms relating to doctoral studies and employment at the university at the end of the brochure.

1. Typical Characteristics of PhD Projects at RWTH Aachen University

In the present context, one preliminary remark must be made: These days, the German university system is undergoing major structural changes which also have an impact on the structure of doctoral study programmes. Nevertheless, there are still certain characteristics of PhD programmes in Germany which are quite different from those in other countries. Therefore, the present section provides you with a list of characteristics which are typical for PhD projects as conducted at RWTH Aachen University.

- Characterising doctoral studies at RWTH Aachen University, a really important point can be made by emphasising what PhD studies at RWTH are not: first, apart from very few exceptions, the doctoral degree is not awarded as part of a structured PhD programme. Further, the education of doctoral students is not centrally organised within a graduate school. Thus, Bachelor's, Master's, and doctoral students alike are taught within the same institutional framework, and it is the individual faculties that are responsible for educational and organisational issues on both graduate and postgraduate level.
- A doctoral degree is primarily awarded for producing a substantive, independent research dissertation under the supervision of a university professor. The dominant model for PhD studies in Germany is also called the "individual postgraduate" or "apprentice model", which is due to the fact that by contrast with most conventional PhD programmes outside of Germany, the German model puts a special emphasis on the relationship between the PhD student and his or her supervisor.
- Most usually, the basic educational requirement for being accepted as a doctoral student is a very good master's degree awarded by an internationally recognised university or equivalent degree-awarding institution. The PhD candidate is expected to have completed a master's thesis. As a rule, a bachelor's degree does not suffice to be accepted as a doctoral student.
- The first decisive step is to find a suitable supervisor for your PhD project (in Germany, your supervisor is called "Doktormutter" or "Doktorvater"). The formal application for a PhD position made to the faculty in question must include a confirmation by your supervisor that he or she accepts you as a doctoral student.
- Internationally, there are two ways of conceiving of PhD studies: either it is seen as the last and highest level of a university education, or it is considered

the first phase of a largely independent professional and vocational activity in the research sector. At RWTH Aachen University, the second view predominates.

- This view is corroborated by the fact that most PhD students, especially those in the field of engineering, are also employees of the university (either in full time or part time positions). Thus, a large number of PhD candidates does not depend on scholarships or similar funding resources. For more information on funding your doctoral studies, please refer to Chapter 5 of the present brochure.
- A candidate's funding resources and his or her field of study are the main factors which differentiate the four typical PhD models given below.
- Responsibility for doctoral studies lies with the nine faculties of RWTH Aachen University. Each faculty has its own official doctoral degree regulations which define the general examination procedures.
- In Germany, there are several different kinds of doctoral title according to your field of study: there is the Dr.-Ing. (Engineering Sciences), the Dr.rer. nat. (Natural Sciences), and the Dr. phil. (Social Sciences as well as Arts and Humanities). Formally however, these titles are equivalent.
- Please note that your PhD project may take about three to five years to complete.
- As a rule, you have to write your doctoral thesis in German. Upon request and in agreement with your supervisor, you are permitted to write your dissertation in English (in a few cases, other languages than German or English might be permitted as well).
- Any formal aspects concerning the recognition of international degrees and enrolment as a doctoral student are dealt with by Division 2.1 of the International Office (see Chapter 4). You can decide whether you want to enrol as a student for your PhD project. Please note that you cannot be accepted as a doctoral student unless you have found a supervisor for your dissertation.
- Students who are enrolled as doctoral candidates are exempt from paying study fees.
- In rare cases, it is possible that you have to complement your academic record by doing some additional coursework or e.g. by undertaking a minor research project before your degree is recognised by RWTH Aachen University. By contrast with some other countries, however, PhD students at RWTH do not have to complete a period of coursework study which is followed by an exam session.

2. Four Typical Models for PhD Projects (And a Few Notes on Medical Studies)

As already emphasised, PhD projects conducted at RWTH Aachen University are usually quite different from PhD programmes based on the Anglo-American model. Among the models introduced in the present chapter, model four – the so-called “Structured Doctoral Study Programmes” come closest to the typical Anglo-American PhD Programmes. At RWTH, however, such structured models are still the exception. But there are also differences between the more typical ways of attaining a doctoral degree. First, these differences are due to the different characteristics of the various fields of study and their respective research methods.

In some fields, the focus may lie e.g. on conducting research in the laboratory, while PhD projects in the Humanities and Social Sciences are largely conducted by doing research in libraries, archives, and by working at home. As a second important aspect, the various possibilities of funding your PhD project must be named: for example, you might be offered a full-time position at the university, receive a scholarship, or work outside of the university to earn your living. Again, in most cases, the available funding opportunities for your PhD project largely depend on your field of study and the financial means of the affiliated institutions and departments.

In the present section, four typical models for PhD studies are introduced, so as to provide you with a comprehensive picture of PhD opportunities at RWTH Aachen University. Subsequently, the special situation in the field of Medical Studies will be briefly touched upon. Please note that in reality the individual, concrete case might be different in some points from the models below – these models are generalizing abstractions which are to outline the major characteristics only.

But first a remark which applies to all of the models below:

Generally, every successful PhD project yields the following results for the doctoral student:

1. The doctoral thesis, which is a substantial contribution to learning in the chosen field, embodies the work that the doctoral student has put into his or her project.
2. The doctoral student has enhanced his or her expertise and capabilities in a certain field of study.

3. The PhD student has gained and/or improved so-called “transferable skills”, such as problem solving and organisational skills, methodological awareness, presentational skills, project management skills, etc.

Currently, RWTH is in the process of further establishing and enlarging its “Center for Doctoral Studies” (CDS), which places special emphasis on developing the doctoral candidates’ transferable skills. If you want to find out more about the CDS and its activities, please visit the web pages of RWTH Aachen University and enter “CDS” as a search term via the full text search option.

Doctoral Studies Model 1:

Laboratory-Based Research, Part-Time Position (or Scholarship)

Most PhD projects at RWTH Aachen University conform to this model, and it is also the most common model for the research projects conducted by foreign doctoral students in Aachen. The model is valid for the natural sciences (physics, chemistry, biology) and to a large degree for the engineering sciences as well as computer science. Its main characteristics are as follows: the research work is largely conducted in the lab, at the technology centre, and at the workstation. You go to your office or workplace on a daily basis and meet and communicate with your colleagues. Typically, your PhD project is funded through part-time employment as a research assistant or, in rare cases, by means of a scholarship. For more information on possible funding models, please refer to Chapter 5.

The research topic for your doctoral thesis will be posed by your supervisor or, alternatively, you and your supervisor arrive at a mutually agreed research topic. This topic should be defined early on in the process, at least in outline, and work on the research project is undertaken right from the beginning. Usually, there are workgroups whose members work on closely related topics. Obviously, each PhD student has his or her individual research topic, but it is safe to assume that colleagues and the leader of the workgroups (in larger institutes not necessarily the professor) have a good overall knowledge of the research area in question and can be considered competent and knowledgeable discussion partners. The research topic can also be part of a larger project funded by non-university institutions (such as the German Research Foundation, or the European Union); alternatively, it may be proposed and funded by industry. This impulse from “outside” however is by no means necessary for a doctoral research project; third-party funding is possible but it is not the rule.

In this model, PhD students usually finance themselves through part-time employment, earning up to 50% of the income of research staff employed in full time positions. In order to be remunerated in this way (which is usually sufficient to make a living), the doctoral student has to perform certain tasks or services not directly related to his or her PhD project. Thus, only a part of the candidate's working hours can be dedicated to the writing of his or her dissertation. The work to be done varies according to department or institute: most usually, PhD candidates assist in teaching or the supervision of students (e.g. they hold seminars, supervise interns, assist with exams, etc.), but they may also be responsible for the maintenance of machines, equipment and appliances in the lab. Further, they usually have to perform organisational tasks and acquaint themselves with computer applications utilized at the institute. In the case of research projects funded by third parties, the PhD candidate may be remunerated for work which is not directly related to his or her doctoral thesis.

Concerning research work, there is regular communication between PhD students and the group leader who coordinates the workgroup's research activities (in smaller institutes this tends to be the professor). Further, most institutes offer regular seminars and other educational events for doctoral students, who are also likely to write scientific publications while working on their dissertation. As a rule, PhD students are also given the opportunity to attend conferences and colloquies.

Doctoral Studies Model 2

Engineering Departments Working in Collaboration with Industry – Full-Time Position

This model is prevalent among the larger institutes of mechanical engineering, whose chair-holding professors are also the directors of institutes not directly belonging to the university (so-called "affiliated institutes", Fraunhofer Institutes). In this model, the emphasis is placed on practical, applied research commissioned by industry and public institutions. Doctoral students are usually employed at the university or the affiliated institute, and they tend to hold full-time positions. Research assistant or PhD vacancies are advertised on the web pages of the institute and/or in RWTH's job database (see also Chapter 5, Financing your PhD Studies). In the advertised job profiles, you can usually find additional information on PhD opportunities. The demands placed on PhD candidates are very high; in most cases, excellent command of the German language is absolutely necessary.

PhD projects which conform to this model can be characterised as follows: First, the PhD candidate works on various commissioned research projects which must be completed for a client to a deadline. In this scenario, doctoral candidates are likely to supervise and coordinate student workers and graduate students who work on specific tasks within the various projects. Among other things, the PhD candidate's activities include extensive communication with customers, project acquisition activities, and the writing of research proposals. Thus, PhD students not only work as researchers, but they also perform organisational and management tasks: therefore, the PhD candidate must bring capabilities such as practical thinking, insight into the concerns of industry, negotiation skills, leadership ability, and the ability to conduct projects under time pressure while combining expertise in engineering with a strong sense for economic considerations.

Typically, after a time of practical and industry-oriented research activity, the candidate's dissertation project will be defined in agreement with the supervisor. Usually, the PhD project will take up and examine in more depth one of the topics dealt with in one of the research projects. In the last one to two years of the PhD project, then, the focus lies on completing the dissertation. Please note that in this model, your workload is likely to exceed 40 hours per week by far!

PhD candidates in the position of research assistant are also involved in teaching; typically, they are entrusted with preparing and keeping up-to-date certain topics of the professor's lectures and developing tasks for exams as well as exercises to be used in courses and tutorials. Further, they will be holding office hours for students and assist them with queries.

Doctoral students in these usually very large institutes are provided with ample opportunities for continuing vocational education and training, which are often organized in similarly ways as in industry.

Doctoral Studies Model 3

Humanities, Social Sciences, Economics and Business Studies

In the arts and humanities, the social sciences, and in economics there are also PhD students who have obtained their first degree abroad, but their number is significantly smaller than in the engineering and natural sciences departments. By contrast with the above models, one cannot easily point to a "typical" way in which PhD projects are funded in these subject areas: quite often, by contrast with PhD candidates in the above mentioned fields, doctoral students in the humanities and social sciences have to apply for scholarships, which are rare and

for which there is a high degree of competition. Part time job positions at the chairs (see Chapter 5) are quite rare as well; thus, PhD students have to find their own ways of funding their studies.

In these fields of study excellent command of the German language is a necessary prerequisite for admission to doctoral studies. Most often, German is the working language within the departments.

Doctoral students are usually provided with a workplace or desk at the institute, but it has to be noted that they also tend to work in archives, libraries, and at home. Generally, the contact to fellow PhD students or colleagues is not as extensive as in study programmes with a focus on laboratory work. However, there are usually regular meetings and colloquies, and opportunities for continued education and training are also offered.

The workload for PhD students concerning teaching and organisational matters at the chair depends on the way they finance their studies. Doctoral students with a (usually part-time) position at the department usually have to hold tutorials and assist students with study-related questions. Further, they have to do administrative work at the department or chair.

Doctoral Studies Model 4

Structured PhD Programmes (Graduate Research Training Groups, Graduate Schools, Research Schools)

Structured PhD programmes are funded, fixed-term research programmes for doctoral students and postdocs with a strong focus on interdisciplinary research. Usually, several professors join forces to organise and supervise these interdisciplinary programmes, which supplement the individual PhD project with a high degree of funding, support and additional training. At the time, there are seven different types of programme at RWTH Aachen University:

- DFG Research Training Groups
- International Research Training Groups
- Integrated Research Training Groups – Collaborative Research Centres
- DFG Graduate School AICES
- NRW Research Schools
- Marie Curie Graduate School
- German Research School for Simulation Science GRS (Aachen – Jülich)

Structured PhD programmes are quite similar to PhD programmes in other countries. A list of currently available PhD programmes as well as links to their respective websites can be found at <http://www.rwth-aachen.de/go/id/cfov>. Alternatively, you can visit the web pages of RWTH Aachen University and enter “Graduate Research” as a search term (“Graduate research” à Department 4). Frequently, PhD candidates in structured programmes are scholarship holders, but there are also candidates who finance their studies through paid employment. You can find scholarship or employment opportunities on the PhD programme’s respective websites; applications are to be made to the spokesperson of the programme.

The “List of Aachen Research Training Groups, Research Schools and Graduate Schools” comprises all PhD programmes available at RWTH Aachen University. So it is quite useless to inquire about structured PhD programmes in other subject areas, as the published list is exhaustive and shows all of the structured programmes on offer. For general questions on these programmes please refer to our staff of Department 4.2 (see the above web address).

5. PhD in the Faculty of Medicine

The regulations concerning the acquisition of a PhD in the Faculty of Medicine on the basis of a non-German medical degree are quite special; thus, a doctorate in medicine differs from any of the above models. The main differences are as follows:

- In order to obtain a degree in Medical Studies and in Dentistry in Germany, students must pass certain state-regulated examinations. Therefore, it is not the university, but the state examination boards which have to recognise non-German degrees.
- If the PhD project does not only involve laboratory work, but also practical work as a physicist, the candidate has to apply for a limited license („Approbation“) with the respective government agencies. It goes without saying that an excellent command of the German language is a basic prerequisite.

If you are interested in taking up a PhD project in Medical Studies, you are advised to get in touch with a person of contact of the Faculty of Medicine. Contact information can be found on the website of our university (Faculties / Faculty 10 / Dean’s Office / Graduation).

3. Responsible for Doctoral Studies: The Faculties

At RWTH Aachen University, the faculties are the organisational units which are responsible for all matters relating to doctoral studies. Every faculty has its own doctoral degree regulations. Even though these regulations are roughly the same across the faculties, some differences exist, such as different rules regarding the language in which the doctoral thesis may be written.

In order to find the relevant information on RWTH's web pages, please select your faculty of choice and from there click on the link to the Dean's Office. Among the various topics you find there, please click on PhD / Doctoral Studies, and you will find an introduction to the topic, a link to the doctoral degree regulations, various fact sheets and forms, and information on the person of contact concerned with all matters relating to doctoral studies. You should get in touch with this advisor as soon as possible.

Many parts of the regulations for doctoral studies become highly relevant as soon as your thesis is completed and you sign up for your doctoral examination. Please read through the regulations carefully and, if you have any problems or questions with regard to certain passages, please ask your advisor to explain them to you as you need a good grasp of the process.

4. Recognition of Your Degree

As already stated in the first chapter, the basic educational qualification for being accepted as a doctoral student is a very good master's degree awarded by an internationally recognised university or equivalent degree-awarding institution. The PhD candidate is expected to have completed his or her master's thesis. In some countries, the degree awarded is not called a master's, but a diploma or Magister (in German) – this is not of great importance as long as it is the highest degree below the PhD in the respective country.

First of all, your degree must be formally recognized by the responsible bodies of the university. In addition, when applying for a PhD position, you need to have a written confirmation by a RWTH professor that he or she is willing to supervise



your PhD project. Before you begin to look for a supervisor, however, you should find out beforehand whether or not your degree can be in principle considered a valid qualification for entry into a PhD programme. Thus we recommend that you get in touch with the International Office (Dept. 2.1) of the university and make an informal inquiry to clarify this question.

A RWTH professor must issue a written confirmation that he or she is willing to accept the candidate in his or her research team. A candidate may only apply for doctoral studies at RWTH Aachen University if he or she has found a supervising professor. Please enclose your curriculum vitae and copies of your degree certificates and specify the name of your home university and, if you are still a student, the type of degree you are completing. The staff of the International Office can tell you (and your prospective supervisor) whether or not your degree is in principle sufficient.

If you have found a professor who is willing to supervise your doctoral thesis, he or she has to sign a formal statement (Confirmation of Supervision, "Betreuungsbestätigung") which confirms that he or she agrees to act as your supervisor. You can find the form and further information on this issue on the web pages of our university (the address is given below).

Importantly, you have to apply for formal acceptance at the faculty in which you wish to undertake your PhD studies. This application is called „Antrag auf Zuerkennung der Promotionsvoraussetzungen“ (Application for formal recognition of your qualification to become a doctoral student). After having taken into account the evaluation by the International Office, the faculty decides whether or not to approve of your application. Thus, the International Office decides whether your degree can be “formally” or “generally” recognized as fulfilling the entry requirements to doctoral studies, but it is the faculty which decides whether you are unconditionally accepted as a doctoral student. It is possible that you are granted conditional approval for entry to a PhD programme, which means that you have to fulfil further requirements in order to be accepted. Thus it might be the case that you have to pass certain additional exams at RWTH before starting out on your PhD project. These additional requirements are usually faculty-specific, and they depend on the individual case at hand. It is likely that your supervisor knows the faculty’s decision criteria quite well and is able to tell you beforehand what you can expect. In order to be able to evaluate your qualification, the International Office needs detailed information

and documentation – general information on which documents to include in your application or request can be found on RWTH's web pages (see below). Due to the fact that both the faculty and the International Office are involved in the decision-making process, we advise you to get in touch with both bodies as soon as possible in order to complete the necessary procedures and formalities early on.

A positive evaluation of your degree on the part of the International Office is not only a prerequisite for acceptance into the PhD programme, but also for your possible employment as a research assistant or research associate. In addition, the International Office is also responsible for the enrolment of PhD students.

Up-to-date information on entry requirements, on the PhD admission process, and on prerequisites for employment at the university can be found on the web portal of RWTH Aachen University: www.rwth-aachen.de/Internationales/InternationaleStudienbewerber (in English: International / International applicants).

5. Financing Your PhD Studies

PhD candidates enrolled at RWTH Aachen University do not have to pay any study fees. Also, as a rule, they do not have to pay for their work place, equipment, scientific journals, etc. Most of the time, but not in all cases, your department or institute also covers costs for attendance at conferences or conventions. Thus, the major cost factors for doctoral candidates will be food, accommodation, clothing, insurances, travel, etc. Costs of living for a single person in Germany are about at least 800 Euros per month. If you have a spouse and/or children, living costs will increase accordingly.

With regard to costs of living, what funding opportunities are available? The most important ones are as follows:

- Scholarship from your home country
- Scholarship from a German funding body
- Paid employment at the university
- Family, partners, property
- Employment outside of the university

These funding opportunities can be described in more detail as follows:

a) Scholarship from your home country

If you “bring” your scholarship to Germany, this may possibly help you find a supervisor for your PhD project. But it does not at all mean that the standards set for the candidate are lower. It is important that the duration of the scholarship is long enough so that the dissertation can be properly completed. Some university staff have had bad experiences with PhD students whose scholarship ran out before their dissertation was completed, as they felt morally obliged and also pressured to look out for new funding opportunities in order not to endanger their students’ PhD projects. The income provided by the scholarship has to be high enough fully to cover the living costs. This of course also applies to PhD candidates who bring their family to Germany.

b) Scholarship from a German funding body

There are several German organisations which offer scholarships to international PhD students, among them exchange organisations such as the DAAD, research institutions, foundations, but also federal governments and the university itself. A good overview of organisations which offer scholarships is provided on the respective web pages of RWTH Aachen University, which can be found e.g. by using the search engine (search term: “scholarship”). These web pages provide you with information on conditions and requirements for scholarships, but of course you should also refer to the funding bodies themselves. The number of applicants, however, far exceeds the number of available scholarships. Moreover, the duration of many scholarships is comparatively short.

c) Paid employment at the university

Many PhD candidates are employed at the university, especially in the fields of engineering and computer science. Funding for employed doctoral candidates comes from various sources, e.g. from university funds, from research organisations which conduct projects in cooperation with the university, from the EU or from industry. PhD students may be employed directly by the university or by a so-called “affiliated institution”, i.e. a research institution affiliated with a university department and usually headed by the department’s professor. The kind of work to be conducted varies and largely depends on the funding source, so it might involve commissioned research, but also teaching and administrative activities at the department. Some of the tasks are described in more detail in the chapter on typical models for doctoral studies (Chapter 2).

Essentially, doctoral students can be employed in three ways:

- as a research assistant employed on an hourly basis
- as a regularly employed research assistant on a part-time basis
- as a regularly employed research assistant on a full-time basis

There are further employment models, but these require a doctoral degree on the part of the candidate.

A necessary prerequisite for employment is a recognised master's degree (or equivalent graduate degree), thus, the educational qualification for the three above employment models is identical. The criteria for differentiation is not a student's educational background but rather the availability of regular positions and funding at the chair or department as well as the kinds of work to be performed. More information on the recognition of degree certificates can be found in Chapter 4; further information on employment- and staff-related matters can be found on the university's web pages under www.rwth-aachen.de/go/id/ptr.

How much money do you earn in the various employment status groups?

Research assistant employed on an hourly basis

In this employment model, payment is made according to hours worked per week; the max. possible amount of hours worked per week is 19. If you are employed for 19 hours per week, you receive approx 1,150 € per month. Keep in mind, however, that you still have to pay tax and insurance – this is a gross or “pre-tax” income. For a thrifty single person, it is possible to cover the costs of living with the remaining sum.

Regularly employed research assistant

As a rule, regularly employed research assistants work on either part-time or full-time basis:

- In a part-time position with 19,92 weekly hours and a gross income of approx. €17,000 per year
- In a full-time position with 39,83 weekly hours and a gross income of approx. €34,000 per year

In these positions, you have to fulfil various tasks which are not directly related to your PhD research; thus, only a certain part of our time can be spent on writing your dissertation. This makes for a major difference in comparison with scholarship holders who can take almost their entire time and fully concentrate on writing

their thesis. So if you are employed, you have your paid work to do in addition to working on your dissertation, which results in a work load that exceeds 40 hours per week by far. This applies especially to PhD candidates in full-time positions. As a rule, PhD candidates who work in a full-time position take longer to finish their dissertation than scholarship holders (who, however, also tend to work more than 40 hours per week, which is due to the usually quite limited duration of their scholarships).

How do you get a paid job position as a PhD candidate? Basically, either your supervisor offers you a position or you look for suitable vacancies on the internet. RWTH Aachen University offers a Job Database on its website which you can find it by using the search function. While browsing through the various job offers, look out for an additional note which states that the offered job can be combined with a PhD project (in German, "Die Möglichkeit zur Promotion ist gegeben.").

d) Using private resources, such as funding through family, partners, or property

Of course it has distinct advantages to have such funding opportunities at one's disposal. Three remarks have to be made in this context, however: The demands placed on PhD candidates who bring their own financial resources with regard to qualification and performance will be as high as the demands placed on candidates with job positions. Second, even if you don't need to earn money, it can be very useful to take on teaching activities at the chair or department because it enhances your qualification. Third, you have to provide evidence to your supervisor and to the visa-issuing authority that your funding resources are reliable and secure.

Employment outside of the university

Of course, PhD candidates can also earn their income e.g. by waiting tables at a café or by giving private lessons to pupils, like so many students do. However, with regard to your PhD project, such occupations are not very helpful; what you have to do in such jobs is far removed from the sort of work to be performed within a PhD project. Further, international candidates who come from outside of the EU will probably have problems getting a work permit by announcing that they intend to look out for a job; such an announcement is far from providing evidence that one will have sufficient funds at one's disposal.

In rare cases – and this is a different matter altogether – highly qualified aspiring junior researchers are recruited by (mostly high-tech) companies which not only

employ them but offer them a PhD project which can be conducted in cooperation with the chair or university department.

It happens from time to time that the candidate's funding source is exhausted before the PhD project is completed. Most of the time, a solution can be found by securing other financial means. But keep in mind that this takes a certain time and effort. Thus we advise PhD candidates to make sure that they have a durable and solid funding basis right from the beginning of their project.

6. Questions you should ask yourself before embarking on a PhD Project

Writing a doctoral thesis means a considerable investment of time, and usually the candidate's income at the time of working on the PhD project is comparatively low. And even in the long run, a doctoral degree is not necessarily financially beneficial. Therefore, you should think twice about whether or not to take up doctoral studies. On the other hand, there are certain career options for which a PhD is a necessity almost, especially if you intend to make a career at university. Some questions which you should think about and answer for yourself before you decide to take up doctoral studies at RWTH Aachen University are given below:

- Do you have a distinctly above average master's degree from a recognised university (or are you very close to completing one)? Did your research project / thesis achieve an excellent rating?
- Do you take a strong and sustainable interest in working on scientific and academic questions and problems?
- Are you highly self-reliant, and capable of working independently with minimal supervision?
- Do you consider yourself tenacious, i.e. do you think you have the stamina to keep on working on a task even though difficulties and problems may arise?
- Are you certain that a doctoral degree is a reasonable investment for your chosen career path?
- Are you prepared and willing to spend three or even four to five years on your PhD project?
- Consider your age: are you still young enough after completion of your doctoral degree to be competitive on the job market?

A few remarks on age and family situation are apposite in this context: Most PhD candidates in Germany are between 25 and 32 years of age; candidates above 30 who are beginning a PhD project may already have problems finding a supervisor. In principle, of course, candidates who have a family are welcome, but they have to consider the possible insufficiency of their financial means (be it an income or a scholarship) to support their spouse and children.

- Are you prepared to take the risk involved in taking up doctoral studies? Even though most PhD projects are completed, success is not at all guaranteed.

There is one very important aspect which needs to be addressed in more detail:

Independence and Self-Reliance

The one character trait that professors of RWTH Aachen University consider indispensable for pursuing a PhD project is a high degree of independence on the part of the candidate. What does this mean? On the one hand, the progress of the candidate's research work is constantly being discussed with the supervisor; in this way, the candidate is able to gain invaluable insights on how to proceed and the next steps are jointly decided upon. On the other hand, it is expected of candidates that they think about and make their own proposals on the direction of their research activity, and that they are able to do conceptual work on their own, i.e. actively plan and take a few steps by themselves without asking for the supervisor's advice on every single step. This sort of „independence“ on the part of the candidate is hard to define, and the degree to which professors expect it in their doctoral candidates varies. There is a broad spectrum of possibilities between the extremes defined by the „lone wolf“ on the one hand, a candidate who is completely self-reliant and self-sufficient, and the highly dependent doctoral student on the other hand who lacks a sense of direction and wants every single step to be defined by the supervisor. In general, however, RWTH Aachen University prefers a high degree of self-reliance on the part of the candidate. Many RWTH researchers have made the experience that a candidate's self-reliance is not only a matter of character, but that cultural factors also play a role: in Europe, self-reliance on the part of the student is considered important, in other cultures, however, the candidate is expected to defer to the supervisor's considerable experience and involve him or her in every single decision. Candidates who come from such a background have to make an adjustment in order to come to terms with the quite different attitude prevalent at German universities. It is advantageous if the candidate is used to working independently and has been able to prove his or her self-reliance at university.

7. How do you find a supervisor for your Dissertation?

Please acquaint yourself with the character of doctoral studies at RWTH Aachen University by reading through the preceding chapters of the present brochure.

Every dissertation has to be supervised by a professor of RWTH Aachen University; co-supervisors may be professors from other universities. As outlined in Chapter 4, you must be able to name a supervisor early on in the application process. Thus the first major task for every potential PhD candidate is to find a supervisor („Doktor-Vater“ or „Doktor-Mutter“) for his or her research project.

For graduates of RWTH Aachen University, this is much more easy than for candidates from other universities or even other countries – the students from RWTH had the opportunity to get to know their professors in seminars, and in turn, the professors or their assistants were able to get to know the candidate and his or her academic capability, e.g. through term papers or his or her master's thesis. Nevertheless, potential candidates from abroad do stand a chance to be accepted as doctoral students. In order to be accepted, however, a certain degree of initiative, self-confidence, and skilled self-presentation on the part of the candidate is required. A letter of recommendation by a member of staff of your university to a (possibly acquainted) RWTH professor would also be very helpful. As an alternative, you could approach and talk to an RWTH professor on a conference.

Your chances of finding a supervisor for your dissertation also depend on your subject area. Every year, about 800 candidates embark on their PhD project, but the numbers for the different subject areas vary immensely. While in the natural sciences approx. 50 % of the graduates take up doctoral studies, the percentage of graduates entering a PhD programme in the field of architecture is a mere 5%. This also implies that the number of open PhD positions in the various subject areas is highly variable.

But how are you to proceed in your search for a supervisor from within your home country? Here are a few tips:

1st Step: Get some general information

First, it is useful to collect and review general information on the university. The



fact that you are reading the present brochure shows that you are well on your way. In general, the web pages of RWTH Aachen University provide a host of useful information.

2nd Step: Identify a person who is suitable to act as your supervisor and advisor. You can try to find support for your search for a supervisor e.g. by writing to the faculty in question and asking for assistance. If you do so, you should be very precise with regard to your subject of specialisation and desired research area. If you just state that you want to do a PhD in Mechanical Engineering, for example, this is too imprecise for a contact person to be able to forward your request to a suitable professor or university department.

It is much more expedient and promising, however, to write to a university professor of your choice whom you have carefully selected by closely examining his or her research focuses. The research areas and activities of the university's chairs and departments are usually described in detail on their web pages, which makes it quite easy for you to identify a university professor who might be suitable to act as your supervisor. Most conveniently, you should start out with the web page providing an overview of the university's nine faculties; as you will see, the faculties 1 to 5 are further subdivided into various sections. Here, you can click on the faculty or department in question, and you will be directed to a list of further sub-units such as institutes, chairs, as well as teaching and research areas. Now you can browse through the descriptions of the research activities of those chairs, sections and institutes which you think are best suited to your research interests. Frequently, you will encounter quite explicit information on open PhD positions or proposals on topics for PhD theses. In this way you can find out about the chairs and departments which are concerned with research fields in which you (possibly) have already gained some experience and in which you intend to work in the future.

Usually, due to your education and interests, only one faculty will be of interest to you. If your interests lie at the intersection of subject areas or if you intend to pursue interdisciplinary research work, however, it is possible that you have to take a closer look at several faculties and departments.

In the Job database of the university, you find information on paid PhD positions. The positions on offer are not ordered according to subject area, and you are advised to do further research on the chair or department which offer positions of interest to you. Concerning the job database, also refer to Chapter 5 c) of the present brochure (Financing Your PhD Studies).

A further way to find a suitable supervisor for your PhD thesis would be to take a closer look at the author profiles in the technical literature of your field of specialisation. If you encounter a research report on a topic which is of especial interest to you, you should gather information on the university or research group with which the author is affiliated. In this way, you can find out which university professors might be the most suitable and promising for your intended research project, and it is these professors you should get in touch with.

3rd Step: Writing a Letter or Email to your Professor of Choice

If you have found a professor whom you consider well-suited to supervising your thesis, you must contact him or her. Please do not simply send an email. Most professors receive scores of emails each day. Many of these get deleted without being completely read. Instead you should send a letter using postal mail. Use email only when you have established a contact with a supervisor beforehand (e.g. via telephone or personal contact) and can be sure that your email will be read!

But what sort of information has to be included in your letter? Most importantly, your letter should demonstrate that you have thoroughly acquainted yourself with the research topics pursued at his or her institute. Think about your situation and your goal: it is your aim to get accepted as a doctoral student at a department of your choice. Thus you have to persuade your prospective supervisor that it is advantageous for him or her to have you in his or her research team. Whether or not the department offers paid PhD positions, your situation is fully analogous to that of an applicant for a job position.

First, you have to provide personal data and information on your education – keep it short but informative. Your course of studies and your research focuses should be delineated in detail, and your academic record should be included as well. Of especial interest are information on your research projects and, most importantly, your master's thesis. Please also provide the most important certificates; if requested, you can add further documents at a later time. A good thing to add, of course, are letters of recommendation by your teachers. Internships and job positions should be mentioned as well.

Apart from detailing your educational background and qualification, you should explain your professional aims and research interests. Give a short explanation about why you want to embark upon a PhD project, and specify your reasons for choosing the department or institute in question. If you already have envisaged a topic for your PhD thesis, you should explain it in a few words. If you are

still unclear about it, you may ask for a topic, but still you need to demonstrate that you have a clear knowledge of and strong interest in the institute's research focuses.

Apart from these subject-specific, academic concerns, you need to address issues such as how you intend to finance your living during your PhD project, and whether you have the necessary linguistic skills. If you were able to get hold of a scholarship, say so and also specify a few details such as its value and duration. If you intend to apply or are in the process of applying for a scholarship, you should mention this as well. In this case, the prospective supervisor may agree to accept you on the condition that you will be granted the scholarship. If you aim at securing a paid PhD position or another sort of employment, you should ask whether the institute in question offers job positions for its PhD candidates. As already mentioned above, at least in the fields of engineering and the natural sciences, a large number of PhD candidates are employed by the university. Sometimes, candidates with scholarships may stand a better chance to find a supervisor, but in general, the financial aspect is just one factor among many.

Concerning your language skills, you should provide information on your knowledge of German and English; if you are able to speak other languages, say so. If you have any certificates which prove your language capabilities, you should enclose them as well. Further, you should ask about which languages are accepted for the PhD thesis. Frequently, candidates are required to take language classes before they can begin their PhD project.

The Reply to your Request

Most usually, you will receive a reply to your request quite soon. Sometimes, especially in the holiday season or around Christmas and Easter, you may have to wait a couple of weeks before you receive a reply. Please understand that it is not necessarily the professor who writes to you in reply; often, it is one of his or her employees, such as a workgroup leader, an assistant or a secretary who is responsible for replying to requests such as yours.

The reply may be positive or negative, but you also may be asked to submit further documents or provide some more specific information.

In case of a negative reply: Please consider that some professors receive several hundred applications and requests per year, and that due to limited capacities, a very strict selection process is being undertaken. Therefore, in case of a negative

reply, you should not be disheartened but keep on trying to find another supervisor. On the other hand, it is always useful to stay alert and critically re-examine one's own position, especially if negative replies keep coming in.

A positive reply can come in so many forms which cannot be discussed in more detail. Please see to it that all open questions are resolved in the reply or in subsequent correspondence. The following matters should be clarified early on in the process: You should have a confirmation that your PhD project is accepted (possibly on certain conditions), the PhD topic should be roughly agreed upon, an agreement concerning finances should have been reached, linguistic requirements and the language of the dissertation should be clarified, and an agreement should have been made regarding potential co-supervisors.

For you as an aspiring PhD candidate, the recognition of your non-German degree and the formal recognition of your qualification to become a doctoral student are of great importance. Regrettably, the regulations of the faculties may vary on minor questions. It is necessary that you talk these formal issues over with your future supervisor, who should support you in the process. The application to the International Office and to the faculty should be submitted early on (see also Chapter 4).

An Alternative: Conducting a limited research study as a first step

If the prospective PhD candidate and his or her supervisor are not acquainted with each other, there remains a quite considerable risk that both parties have mistaken assumptions about each other, which might lead to communicative or inter-personal problems later on. These sort of problems can be prevented by agreeing on an initial, limited cooperation: the prospective supervisor offers the candidate a research project which is limited in scope for the candidate to work on – a project which can be considered a sort of internship at the department. While working on this small-scale project, both parties get to know each other and are then in a better position to agree on whether or not to proceed with a full-fledged PhD project. For the duration of this small-scale research project, the candidate is usually employed as a research assistant on an hourly basis (see Chapter 5, Financing Your PhD Studies). If the doctoral project does not materialise in the wake of this limited collaborative project, the candidate nevertheless has gained valuable experience during a short-term study period abroad.

Explanation of a few selected German terms concerning Organisational Aspects of Doctoral Studies

In the list below, some recurring German terms and expressions concerning doctoral studies are briefly explained, and, where possible, rough English equivalents are given. This is not meant as a glossary of university terminology; it is a selection of terms which keep cropping up in descriptions of PhD programmes and their formal and organisational aspects.

German Terminology	Description	English Equivalent
<i>Organisational Units</i>		
Universität, Hochschule	Both terms are frequently used synonymously. "Hochschule" is the broader term, encompassing university, university of applied sciences, academy of art, etc. Importantly, however, only the university has the right to confer doctoral degrees.	University (Fachhochschule = University of Applied Sciences)
Fakultät - Fachbereich	Subdivision of the university according to subject area. The terms are used synonymously.	Department (School)

German Terminology	Description	English Equivalent
Dekanat	The Dean's Office is concerned with the administration of the faculty, and the dean is the head of the faculty. The Dean's Office is your contact point for matters pertaining to doctoral studies.	Dean's Office
Fachgruppe	Subunit of a large faculty	Section
Institut	Organisational unit within a faculty or section, headed by a professor, i.e. the institute's director. Several professors may belong to an institute.	Institute
Lehrstuhl	Highest position for a professor; quite often, "Lehrstuhl" and "Institut" are used interchangeably.	Chair
Lehr- und Forschungsgebiet (LFG)	Position of a lower-ranked full professor. A LFG is usually smaller than a "Lehrstuhl"	Teaching and Research Area
Graduiertenkolleg	For a short description, please refer to Chapter 2, Model 4	Research Training Group
Graduiertenschule	For a short description, please refer to Chapter 2, Model 4	Graduate School

German Terminology	Description	English Equivalent
Center for Doctoral Studies (CDS)	The CDS is the central body concerned with additional and continuing education of PhD students. For more information, please refer to the web pages of the CDS.	
<i>Employment/Staff/Positions at the university</i>		
Professor/Professorin Hochschullehrer /Hochschullehrerin, at times just „Lehrende/r“	University teacher who as a rule has obtained a “habilitation”, an extra post-doctoral qualification usually required of German professors. There are various ranks among the group of professors.	Professor
Betreuer/in = Doktorvater oder Doktormutter	The professor who supervises a candidate's PhD project and also acts as an advisor of the PhD candidate.	PhD supervisor
Doktorand – Promovierender – Promovend	A PhD candidate, irrespective of whether or not he or she has a paid position at the university.	PhD student, Doctoral student

German Terminology	Description	English Equivalent
(1) Wissenschaftlicher Mitarbeiter bzw. Wissenschaftliche Mitarbeiterin; (2) Wissenschaftliche/r Angestellte/r; (3) Wissenschaftliche Hilfskraft	An academic member of staff, employed by the university on behalf of a professor (e.g. a PhD candidate in a paid job position) (1) is a general term for the member of staff (2) a regularly employed member of staff in a part-time or full-time position (3) a member of staff paid on an hourly basis (up to 19 h per week); see also Chapter 5, "Financing".	Academic staff
(bezahlte) Tätigkeit, (Arbeits-)Stelle, Anstellung, Beschäftigungsverhältnis	Various expressions which indicate that the person in question (e.g. the PhD candidate) has a contract with the university.	Job, position
(1) Vollzeit / (2) Teilzeit / (3) stundenweise	Acc. to tariff agreement: (1) 39,83, (2) 19,92 , (3) between 1 and 19 hours per week	Full time, part time
Drittmittel	Funding of a PhD candidate's job position through non-university organisations	Third party funding

German Terminology	Description	English Equivalent
<i>Sonstiges</i>		
Promotion - Doktorat	Period of time in which the PhD thesis is being written. "Promotion" also designates the successful completion of the PhD project.	PhD or doctoral studies
Dissertation - Doktorarbeit	The PhD thesis or dissertation is a scientific study, the completion of which constitutes the central task of a PhD project.	Dissertation, PhD thesis
Promotionsordnung	A set of regulations concerned with all formal aspects pertaining to doctoral degrees. Each faculty as its own doctoral degree regulations.	Doctoral degree regulations

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