

CDR Doctoral Study Manual

This document is meant to give you some key information about important aspects related to the doctoral study at the Centre for Development Research (CDR) of the University of Natural Resources and Applied Life Sciences, Vienna (BOKU). It is meant to give you some important information on administrative requirements of the BOKU and of the CDR, as well as provide you with some informal advice, based on past experiences of both doctoral students and supervisors. Please be aware that every doctoral thesis is different and each supervisor has individual preferences, thus some of the recommendations we provide here might need to be adapted to your specific situation and thesis.

Content

1. Starting a doctoral study at the BOKU – Administrative issues	1
2. Formal requirements for completing a doctorate	3
3. Timeline for a 3-year doctorate	4
4. Role and responsibilities of the supervisor, the advisors and the doctoral student	8
5. The doctoral research proposal	11
6. Literature and links.....	12

1. Starting a doctoral study at the BOKU – Administrative issues

You will find the key information related to the administrative requirements on the website of the Students' Registration Office which, in German is called "Studienabteilung" or "Studiendekanat" (<http://www.boku.ac.at/709.html?&L=1>). Please check this website as well as the links included there, whenever you need information. The information on this website is regularly updated and expanded. This is also where you can download the various forms you will need (unfortunately not all pages on the website are available in English, so you might want to ask a German speaking colleague for help). One important website is the one listing information on how to finish your doctorate (submission process), and it is advisable that you are familiar with that information early on (<http://www.boku.ac.at/8176.html?&L=1>).

Another very important website is the one giving you information on how to use the BOKUonline web portal (<http://www.boku.ac.at/zid-boo-stud.html?&L=1>). There you can find information on how to change your email address, register for courses, answers to FAQ for students, etc. The BOKUonline web portal (<https://online.boku.ac.at/>) is the key portal for everything related to courses (description, schedule, registration) and exams (date, results). There you also have a "personal business card" where you should include a picture of you as well as a link to your personal website (if you have one).

Within the first 1 month upon arrival at the BOKU there one important administrative task that you need to fulfil: Immatriculate as a doctoral student at the BOKU. This will give you a Student Identity Card ("Studentenausweis"). It will also give you two numbers that will be very important for the whole duration of your stay at the BOKU:

- (a) A student registration number ("Matrikelnummer") which you will need to include in all your documents and you will need to register for courses, and
- (b) The number of your study programme (H786 for the doctorate in agricultural sciences; H784 for the doctorate in social and economic sciences).

Within 6 months of immatriculating, you should submit the form “Registration of the doctoral project” in which you include information on:

- Your supervisor
- The members of your advisory team
- The list of courses you will attend (in the end you’ll have to have a min. of 20 ECTS)
- A brief overview of your proposed doctoral research (max. 2 pages)
- A time schedule for the 3 years of your doctoral research

This official form needs to be signed by you, your supervisor and the head of your host institution (i.e. either the Head of Department or the Director of the CDR). Once this application has been approved by the Students’ Registration Office, you will be issued a legal document (“Bescheid”), which will be sent to you by postal mail to your Vienna address (as indicated in your Registration form). This is an important document, so you need to keep it safe (it is advisable that you scan it and/or keep a copy of all official communications, esp. with the Students’ Registration Office). Only once you have received this document are you allowed to take exams of the courses you want to attend. If you take exams before this legal document has been issued, the course will **not** count towards your doctoral requirements.

Note that you can also submit a partial list of the courses you want to attend (i.e. less than the 20 ECTS that are required), for example if you are not yet sure which courses suit your needs best. In this case you will be issued a “Teil-Bescheid” and as you submit the missing courses, you will be issued a revised Bescheid. You can also change courses that you had in previous list (but you need to justify it, e.g. when a course has been cancelled for that semester, or because the topic of your thesis has changed). Be aware that any additional courses or any changes of courses you want to take for the doctorate need to be approved beforehand by submitting an application to the Students Office (same form as above). It is important that the final Bescheid has the list of courses that you will actually take: at the very end of your doctoral study, when you submit your documentation, it will be checked whether you have completed all the courses listed in your “Bescheid”.

Be aware that during your doctoral study, you can attend as many courses as you are interested in (and have time for!) as there are no fees attached to attending courses at the BOKU or other universities in Vienna (as e.g. in the USA, where each course needs to be paid for). If you want to attend additional courses (over and above the 20 ECTS) you do not have to list them on the Registration form and do not have to get them approved by the Students Office. However, you should get an informal approval from your supervisor. All courses for which you will have passed the exam will be listed on your “Diploma supplement”, thus indicating to a future employer the range of topics that you have acquired knowledge on.

You can also attend courses at other universities (e.g. in Vienna or any European country). If you do so and want these courses to be part of your 20 ECTS, you will need approval and you need to be aware that this is not always a straightforward process (i.e. the administrative process of getting approval is often difficult due to a lack of clear guidelines and processes). If you want to attend Summer Courses or courses at universities abroad you also need to be aware that this might involve costs and that you will have to identify sources of funding to cover these costs.

2. Formal requirements for completing a doctorate at the BOKU

Fundamentally there are **two requirements** to be awarded a doctorate at the BOKU:

- 1) The successful completion of courses with a min. of 20 ECTS (ECTS = European Credit Transfer System, which indicates the student work load for each course: 1 ECTS = 22-25 hours of work, over a period of 15 weeks (= 1 semester). The 22-25 hours include both in-class and out of class work time).

Most courses at the BOKU have between 2 and 4 ECTS, thus you will take between 6 and 10 courses. You can select courses out of the pool of courses at Master level at the BOKU (at the moment there are only few doctoral-level courses available). If you are not fluent in German, it might be easier to refer to the list of courses offered in English, which is provided by the Centre for International Relations (<http://www.boku.ac.at/zib.html?&L=1>). The number of ECTS for each course is an information you find in BOKUonline (<https://online.boku.ac.at/>).

Please note that some students will have to take more (sometimes much more!) than 20 ECTS, especially if they have not completed a MSc which is fully equivalent to one of the MSc offered at the BOKU. For example if your MSc is in biology, and then you want to pursue a doctorate at the BOKU, you will have to take an additional +/- 12 ECTS (the exact amount and possibly the type of courses will be decided by the Studiendekan).

- 2) A doctoral thesis, which two reviewers have reviewed and have found to fulfil the standards. (Note: your supervisor cannot be a reviewer, and it is a good idea to include potential reviewers as members of the advisory team so that they are involved in your research from the beginning).

There are **two forms the doctoral thesis** can take (note that the CDR strongly encourages you to aim for a cumulative thesis. But the decision needs to be made in agreement with your supervisor):

- 1) A monograph: this is a thesis which is meant to be read as a book, i.e. with chapters on introduction, methods, results, discussion, and conclusion.

- 2) A cumulative thesis which is made up of two constituent parts:

- (a) Part I: An extended summary which presents the research in an integrative way, i.e. explains the overall objective of the research, the general theoretical and methodological approach, reviews the papers, highlights the most significant scientific results achieved, and relates the findings to the current international state-of-the-art. Part I usually has between 20 and 50 pages (single spaced, 12 pt).

- (b) Part II: A collection of published papers, at least two of which must be accepted for publication by an international peer-reviewed Journal listed in the Science Citation Index (SCI) or the Social Science Citation Index (SSCI) (i.e. have an impact factor; to check if that is the case, look up the Journal in the Journal Citation Reports of the ISI Web of Knowledge: <http://admin-apps.isiknowledge.com/JCR/JCR?PointOfEntry=Home&SID=N1f6C5OdCodAJd2EhbF>). Be careful: the papers need to be accepted ("accepted" or "accepted with minor revisions")! If they are only submitted, or if the editor has requested "major revisions", this is usually not enough to fulfil the requirements.

Next to the two papers accepted in journals with an impact factor, additional papers can be included, such as papers published in conference proceedings, papers published in journals without impact factor, or manuscripts that have been submitted, but are not yet accepted for publication (i.e. are still undergoing review).

For each paper included in the collection, you need to include a co-author statement, explaining the role of each co-author in each paper (i.e. who has done what? Please refer to the CDR Authorship Guidelines for further information).

3. Timeline for a doctoral study

If you fail to plan, you plan to fail
Aphorism

The schedule to complete a doctorate is 3 years. This may seem long, but you should not fall into the trap of thinking you have plenty of time! Most students are under a lot of stress in the last 6 months. Some of that stress can be alleviated by careful planning AND sticking to deadlines!

When planning your 3 years (Fig. 1), please take following items into consideration:

- At BOKU you are required to take 20 ECTS. Be aware that some courses are held only during the winter term (October to January) and some courses are held only during the summer term (March to June). You thus need to make sure that the courses you want to take (and include in your registration form) do not conflict with your field work.
- It seems best to complete all course requirements in the first year of your doctoral study. Alternatively (e.g. if you need to start field work early), you can complete some courses in the 2nd year. However, you are strongly advised not to schedule any course work in the 3rd year of your doctoral study, as this is likely to cause stress. By then you will want to focus on writing your thesis and publishing papers.
- You need to have a complete version of your thesis approx. 6 months before the end of your doctoral study (so that there is sufficient time for the reviewers to read it and suggest changes and for you to incorporate these required changes).
- This leaves you with 2 years to dedicate to research and writing!!

To allow checking your progress in your doctoral study, **define clear milestones** that need to be achieved. Typically a milestone will be the completion of a document or a meeting. The role of milestones is to break up the doctoral study into little chunks, and give you a chance to focus on these smaller goals on the way to completing your doctorate. These milestones also help you, your supervisors and your advisors to verify that your research is on track and on schedule. You should have a milestone at least every 6 months. Defining these milestones will depend on your thesis (topic, discipline). It is your responsibility to define them and they will serve as a basis of your bi-annual performance evaluation. Here are some examples of milestones (see also examples in Fig. 1):

- Month 6: course work is completed and the research proposal is approved by the supervisor and the advisory team following the Proposal Workshop.
- Month 12: Data collection for paper 1 is completed
- Month 18: Paper 1 is submitted to a Journal
- Month 24: Field work is completed
- Month 26: Paper 2 is submitted to a Journal
- Month 30: Complete thesis is submitted to the supervisor
- Month 32: Revised thesis is submitted to the two reviewers

Attending conferences, summer courses, etc.: Most topics will make it necessary to establish contacts with scholars outside BOKU at national or international level. Such contacts are often established through participation in workshops, symposia, conferences, etc. However, participating at a conference can be hard to plan, as you might not be aware of which conferences will take place in 1.5 years from now. Usually participation at a conference is most fruitful if you have completed your first phase of data collection and analysis, i.e. have (preliminary) results to present.

You will need to 'keep you eyes and ears open' to identify suitable conferences. If you have identified a suitable conference, be clear about why you want to attend this specific conference, i.e. assess the opportunities for scientific networking. Then discuss with your supervisor the benefits of attending a particular conference, e.g. access to most recent knowledge and research results, personal contacts to experts in your field, publication in proceedings, which you can include in your thesis. You also need to discuss the drawbacks, e.g. conflict with time needed for thesis, conflict in timing with data collection, need for funds. If you and your supervisor decide that it would be good for you to attend

the conference, you will have to identify a source of funds to cover the costs (registration, travel, accommodation).

Bi-annual evaluation: An evaluation of the performance of each doctoral student is conducted every 6 months. The purpose of the evaluation is to assure that you are making adequate progress towards the completion of your doctorate and to discuss any problem that might have arisen.

The basis of this evaluation is a 6-monthly report that the student compiles and sends to the supervisor before the scheduled meeting. Once approved by the supervisor, this report is sent by the student to all the members of the advisory team. This 6-monthly report, and thus the evaluation, includes e.g. the review of the courses you have completed, grades earned, milestones accomplished, conferences attended, papers submitted, and any other issue that affects the progress of the doctoral study (e.g. communication, personal issues).

Some of the bi-annual evaluations will take the form of a scheduled, formal discussion with your supervisor; others will take the form of the student presenting and discussing his/her work to a larger group. In both cases, the supervisor will write an assessment of the student's progress (addressing e.g. completion of milestones, progress in theoretical or methodological understanding, progress in writing skills, knowledge of the literature in the field). This written assessment is sent to the student and all the members of the advisory team by the supervisor.

For the evaluations that take the form of a scheduled, formal meeting with the supervisor, the supervisor will discuss his/her evaluation of the student's progress. The student will provide feedback on the guidance provided, changes he/she would like to request, as well as address any issue that he or she would like to raise.

If a student fails to make satisfactory progress towards the doctorate, the supervisor can decide to stop supervising the student. If the supervisor sees that the progress is unsatisfactory, this will be clearly communicated during regular meetings. Unless there is a clear improvement of performance, supervision will be discontinued. The reasons will be documented in written and sent to the advisory team members. If the supervisor decides to stop supervision, the student will have to search for a new supervisor if he or she wants to continue with the doctoral study. If a student is not satisfied with the guidance offered by the supervisor, he or she can decide to change supervisor.

For OeAD-funded students, the OeAD form needs to be completed every 12 months.

Timeline for submitting your thesis (i.e. the last 6 months of your doctoral study)

- Submit your completed thesis to your supervisor.
 1. Give the supervisor 1 month to give you detailed feedback
 2. You will then need 1-2 weeks (may be longer) to correct the thesis accordingly
- Select reviewers: Reviewers can be proposed by the doctoral student, but this proposal should be discussed by the supervisor, who needs to agree on the choice (see section 4 for the formal requirements that reviewers need to fulfill). Once the reviewers have been agreed upon, you should send them an email and ask if they would agree to review your thesis (include some brief information as to the general topic, whether it is a cumulative thesis or a monograph, approx. length and estimated date when you will send them the thesis and when you will need the review).
- Discuss with your supervisor the appropriate time to submit the revised thesis to the reviewers. There are usually two possibilities, which one is selected depends on your supervisor and on the reviewers.
 1. The revised thesis is sent to both reviewers for comments early on. When you send your thesis to them, kindly ask them to suggest improvements, so you can take them into account before the official review process (once the thesis is officially submitted, you cannot revise it any more). Give the reviewers 1 month to give you feedback. You will usually need 1-2 weeks to correct the thesis accordingly, but it might be more. This revised version is then given to the supervisor, and once s/he agrees with the thesis, it is the final version. This final version is then sent to the reviewers for the formal review and for suggesting a grade.

2. After you have included the revisions required by your supervisor (and may be others that you have asked to give you feedback), and the supervisor has agreed with the corrections, the thesis is finalised. This final thesis is then sent to reviewers for review. They thus do not suggest improvements, but only assess the strengths and weaknesses and suggest a grading.
- Complete your administrative paperwork to submit your thesis (do not underestimate the time it takes to get your paperwork together!).
 - Formally submit your thesis and paperwork to the Students' Registration Office (Studienabteilung). Your final, bound thesis must be submitted 3 weeks before the date of the Rigorosum (defense). The Registration Office will officially forward it to the reviewers for a review (works fairly well when the reviewers work at the BOKU, more problematic if they are at another University, which leads to time delays. So do not rely on this, but send the thesis in pdf-format to the reviewers yourself, as soon as possible, i.e. as soon as it is completed). The two reviews must be with the Student's Registration Office at least 3 days before the date of the defense. (If the reviewers have read and commented on your thesis before, and have been informed in advance of the upcoming need to write a formal review, it is often written within 2 weeks, but, to be on the safe side, it is better to include some buffer time).
 - You can propose a date for the Rigorosum (oral thesis defense), which can be approx. 1 month after you submit your thesis. This means you have found a date where both examiners have time. The examiners are suggested by the supervisor (after consulting with the student). They may be the reviewers, if they are from the BOKU. If the reviewers are not from the BOKU, usually faculty members from the BOKU will be asked to serve as examiners (they must have a habilitation). It is usually advisable to seek an appointment with the examiners and discuss the general topics they will ask you during the examination (e.g. they might give you chapters or papers to read). Usually your supervisor will be one of the examiners.
 - If you want to take part in the graduation ceremony (which takes place approx. 4 times/year), your Rigorosum (defense) must be at least 3 weeks before the date of the graduation ceremony. (If you do not want to take part in the ceremony, you will get your doctoral certificate approx. 1-2 weeks after the Rigorosum).

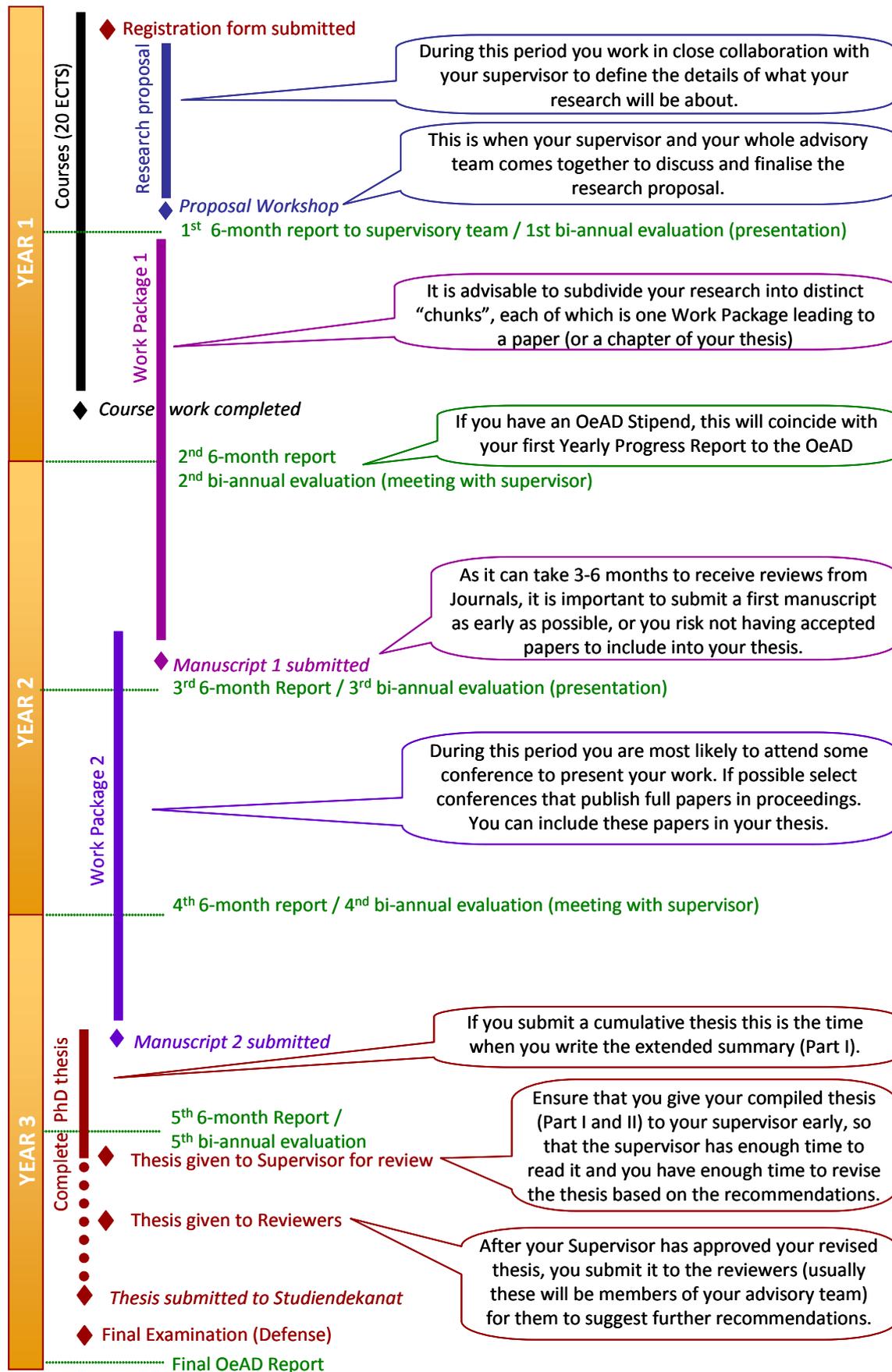


Fig 1: Example of a time schedule and milestones for a 3-year doctoral study

4. Role and responsibilities of the supervisor, the advisors and the student

You cannot fill a cup that is already full
Proverb

The role of the supervisor

The traditional system of doctoral supervision in Austria was close to the master-apprentice model. It is based on the concept that to learn a craft, it is best to work closely with someone who has substantial experience and expertise in that craft. In line with this tradition, the supervisor is the central person for the doctoral student, guiding him or her throughout the 3-year period. This means the student must accept that guidance. If that is not the case (guidance is not offered, or guidance is not accepted), a new supervisor must be found if the doctorate is to be completed. The supervisor is expected to provide continuing guidance to the doctoral student and to ensure that the milestones are achieved on time. However this does NOT mean that the supervisor should be expected to micro-manage the student. The student is expected to be self-reliant in many ways, i.e. take initiatives and make informed decisions in a responsible, professional manner.

Overview of the tasks of the supervisor:

- Clarify expectations as early as possible: Each supervisor has specific expectations that may or may not be shared by other supervisors. These need to be spelled out clearly so the student is aware of them and can comply with them (e.g. frequency of meetings, need for documents to be sent ahead of meetings, need for minutes of meetings, means of communication (email attachments vs. printed documents), specific formatting preferences)
- Meet every week or every two weeks for the first 6 months (when the detailed research proposal is developed, detailing the theoretical framework, specifying the research questions, methods and planned output). During this phase the supervisor guides the student to narrow down the research topic to a project that is feasible, will provide guidance regarding the theoretical framework and the key references. However, the student will seek literature independently; take the initiative to propose methods and approaches, etc.
- Discuss with the student who could be a member of the advisory team and who will review the final doctoral thesis.
- Read documents such as the doctoral research proposal, manuscripts, abstracts submitted to conferences, etc. thoroughly and provide detailed feedback suggesting improvements. This criticism should be given in a constructive, supportive and sensitive fashion.
- Ensure that the 6-monthly report to be sent out to the members of the advisory team is accurate, complete, and sent out in time.
- Be available to discuss various scientific issues (e.g., theories, methods, challenges during field work)
- Discuss and agree on adjustments of the work plan, change deadlines, change content of planned manuscripts, change in the authors of a manuscript, etc.
- Meet regularly and provide detailed comment in the last 6 months (compilation of the doctoral thesis)

The role of the members of the advisory team

Although the supervisor has the main responsibility, the BOKU also requires to name 2-4 scientists as members of the advisory team. Given the multi-disciplinary nature of many doctoral projects at the CDR, this is welcome as it allows to ensure that scientists of the needed discipline, and with complementary experience are available to provide input in the doctoral research project. The student is expected to discuss the selection of the advisory team members with his/her supervisor.

When selecting the members of the advisory team several issues need to be taken into account:

- The advisors must be interested in the topic of your thesis, and must have some relevant expertise that will be useful at some time during the doctoral research.
- Advisors need to have a doctorate (formal requirement at the BOKU).
- It is a good idea to include at least one (ideally both) scientists who will officially review the completed thesis in the advisory team (the supervisor is never a reviewer, but usually one of the two examiners). To formally review a doctoral thesis, a scientist must be ‘habilitated’ (as indicated by his/her title: o.Univ.Prof., Univ.Prof., ao.Univ.Prof, Assoz.Prof or Priv.Doiz.), or be a professor at a university abroad.
- The CDR also strongly encourages to include scientists from the student’s home institution in the advisory team, as they might be a helpful resource, e.g. during your field work.

The members of the advisory team need to be involved throughout the doctoral project. It is the task of the student, after discussing potential team members with the supervisor, to contact the potential advisors and ask them if they would be willing to be part of the advisory team. The members of the advisory team are expected to provide input based on their specific area of expertise. This will be most intensive during the conceptual phase (detailed research proposal, conceptual framework, method), as well as during the analysis and write-up of the results.

Members of the advisory team can be (but do not have to be) co-authors on manuscripts written by the student. The general topic of the two manuscripts for peer reviewed Journals to be written by the student should be outlined in the Research Proposal. Potential co-authors should be discussed at that moment (i.e. latest during the Proposal Workshop). This is a preliminary work plan and might change, as the research develops. The student needs to keep in mind that advisors can only be co-author if they have substantially contributed to the manuscript. However, advisors are always expected to read a manuscript before submission to a Journal, to point out potential improvements and/or to ensure that the literature in their area of expertise is well accounted for. If an advisor only reads and suggests rewording part of the manuscript, s/he cannot be a co-author, but should be mentioned in the acknowledgements (for detailed rules on authorship, please refer to the “CDR Authorship Guideline”).

Another important role of the members of the advisory team is to mediate between the student and the supervisor in the case that tensions develop. Members of the advisory team can be called upon by the student and by the supervisor to discuss the issues at hand and facilitate the process to find a solution that is feasible for all involved and that will ensure a high quality standard for the doctoral research.

Overview of the tasks of the advisors:

- Comment on the research Proposal (Months 5-6)
- Take part in the Proposal Workshop (Month 6)
- Advise on the specific aspects of the research related to their area of expertise
- Read and make suggestions on all Journal manuscripts prior to submission
- Work closely with the student on those manuscripts that they co-author
- Provide a detailed review of the preliminary version of the full doctoral thesis, with specific suggestions on how to improve it (Month 30-32)

You can take a horse to the water, but you can't make him drink
Proverb

The responsibilities of the doctoral student

A doctoral research project can be considered as a three-way interaction between the student, the supervisor and the advisory team. While the supervisor and the advisory team are expected to

provide many forms of support and guidance, the ultimate responsibility for managing the doctoral project and obtaining the doctoral degree rests with the student. To ensure adequate progress the student is responsible for and is expected to:

- (1) quickly become familiar with the nature and limitations of doctoral research in the chosen field; the qualities and skills required to complete a doctorate and how to acquire these skills. The student may want to consult with supervisors and advisors to do so, but also needs to display individual initiative.
- (2) ensure, from the outset, that they meet with their supervisors at intervals that were mutually agreed. If the student feels the need for additional meetings, the student must convey that need to the supervisor (or to advisors if their expertise is needed).
- (3) clarify which type of communication channel the supervisor and each member of your advisory team prefers: phone calls, printed versions of documents, documents sent as attachments via email, etc.
- (4) present their supervisor with at least one significant piece of written work (e.g. draft chapter of the thesis, manuscript for submission) annually.
- (5) If a student is unable to resolve serious problems with the supervisor, he or she should seek advice and guidance with members of the advisory team. It is important that these steps are taken without delay so that progress is not unduly impeded.
- (6) Students are expected to pay particular attention to the presentation of all documents. Not only should any document sent to the supervisor or the advisor be carefully checked for errors, but it should be clearly structured, consistently formatted and comply with a high standard of written English. It is also important that you master standard software such as MS Word and use key features it offers (such as style sheets, paragraph formatting, etc.)
- (7) Students are expected to be familiar with the literature in their particular field (this includes theories, methods as well as relevant empirical research) and are expected to be able to assess it critically. It is the student's responsibility to conduct a comprehensive literature research and store literature in a common data base (applicable for all CDR fellows). They should support any conclusions with adequate data or evidence and analysis.
- (8) In all their research work, students must avoid:
 - a. The fabrication of data (i.e. claiming results where none have been obtained)
 - b. The falsification of data (i.e. altering results to confirm the hypothesis)
 - c. Plagiarism (i.e. including the direct copying of textual material, the use of data or ideas from other people without adequate attribution)
 - d. Attribution to others who have not in fact contributed to the research (e.g. including someone as a co-author although that person has not – or not sufficiently – contributed to that specific paper to merit authorship)
- (9) Students are responsible for organizing the Proposal Workshop roughly 6 months after the start of the doctoral study. During this workshop the proposal (conceptual framework, methods, and planned publications) are presented and then discussed in detail with all members of the advisory team.
- (10) Sending a comprehensive yet concise report on the progress of the doctoral study every 6 months to the supervisor in preparation of the bi-annual evaluation. This report (2-3 pages) details the progress made over the last 6 months, which milestones have been completed, which challenges have been faced, which results have been obtained, what changes to the original plan need to be made, and what is planned for the next 6 months. After approval by the supervisor, the student sends this report to all members of the advisory team.
- (11) Seeking appointments with a specific advisor whenever his/her expertise is needed. When seeking an appointment or request input via email, always send a brief outline of the overall topic of the doctoral research, the current status, and be clear and specific on what you need! Never forget that advisors are busy with many different projects and might not remember the specific details of your doctoral research or its current status.
- (12) Ensuring that you give advisors adequate time to provide you with feedback: 1 week for general inquiries via email, 2-3 weeks for comments on manuscripts, 6 weeks for the

preliminary doctoral thesis. It is the duty of the student to plan accordingly, not the responsibility of the advisors to 'hurry up' because of the student's poor planning or delays.

As the above list demonstrates, there are at least two aspects which a student needs to master, to successfully complete a doctorate:

- The work on the thesis itself
 - Having a good knowledge of the literature (on relevant theories, methods as well as previous research)
 - Doing research (know what it means to do science, incl. disciplinary peculiarities)
 - Be aware of the requirements for academic writing (careful choice of words, short sentences, clear arguments, well structured texts)
- The responsibility for managing the process:
 - Self-management: self-discipline (work regularly, avoid procrastination), cope with the inevitable ups and downs, deal life in Austria and at the BOKU. For this it is very helpful to meet regularly with peers.
 - Manage relationships: esp. ensure good flow of information with the supervisor and with the advisors
 - Administrative issues with the university and with OeAD

This is by no means easy. It is thus advisable that you get in touch with other doctoral students (at the BOKU, at another university in Vienna or virtually by joining an internet-based self-help group), and that you read books (see section 6) on how to manage three years as a doctoral student! Be aware that being a doctoral candidate is a form of training, i.e. you are not expected to know everything when you start your thesis! What is important, is an open attitude and a willingness to engage in a continuous learning process. Only then will the doctoral study fulfil its aim, which is to provide you with both the formal scientific credentials and the informal ('soft') skills required to be a scientist.

5. The doctoral research proposal

Within the first 6 months of your doctoral study are devoted (next to attending courses) to writing the doctoral research proposal. This research proposal should have between 10-20 pages and needs to give a comprehensive overview of what you intend to focus your research upon. It should comprise following sections:

Abstract: which provide a summary of the context, significance, theoretical framework, method and expected outcome of the doctoral research (max. 300 words).

The scientific content of the research:

- The background of the research problem, focusing on explaining the development context and development challenges that the research will address. It should answer the following questions: What is the problem and why should it be studied?
- The state-of-the-art which details what information is already available (i.e. relevant prior research results): what have others found out about the problem? What are the gaps in understanding? Which gaps will be filled by this research? This requires a comprehensive literature review that should include both 'grey literature' (e.g. working papers, research reports) as well as work published in peer-reviewed journals.
- Theoretical framework: which theories will you use to build your conceptual framework? How will you approach the problem?
- Research objectives: Why do you want to carry out the research? What objectives do you hope to achieve? The objectives should be closely related to the statement of the problem,

i.e. it should include an indication how anticipated research results can contribute to understand and/or to mitigate development challenges (in the sense of “knowledge that makes a difference”).

- Main research questions: Based on the research objective, formulate 2 or 3 research questions (or hypothesis if applicable) which systematically address the various aspects of the problem and the key factors that are assumed to influence or cause the problem. Research questions may be further sub-divided to specify exactly which aspects will be included, i.e. what will you do in your research, where and for what purpose. Be as specific as possible so as to focus the research on the essentials and avoid the collection of data which are not strictly necessary for understanding the problem you have identified. The research questions also structure your study into distinct phases (or work packages), so that each research question leads to one paper.
- Research methods: what data do you need to answer your research questions? This requires specific answers to following questions: What type of study you will conduct? How will you select your site and your sample? When and where will you collect the data? What data collection technique you will be using? Which methods will you use to analyse each set of data? Specify which data you will use to answer each of your research questions. Explain how the various analyses complement each other and form a coherent whole.
- Reference list: list of all the publications that you have referred to in your research proposal. Make sure that it is complete and consistently formatted.

The structure of the doctoral research project and expected outcome:

- Detailed time schedule for the whole doctoral project, with milestones and specifying when you intend to do field work and will be abroad.
- Outline the content of the final thesis: indicate whether you intend to publish a monograph or you aim for a cumulative thesis (a collection of papers). Note that the CDR strongly prefers cumulative theses.
- Outline the publication and dissemination strategy for the project. For each planned publication indicate a working title, (co-)author, length in pages (or number of words), outlet (e.g. conference, popular journal, international journal) and time of submission. It is recommended that you make available all publications (as far as copyright allows) as a pdf-file on the website which describes your doctoral research.

6. Literature and links

There are substantial differences between what you can expect of your supervisor (i.e. impulses at key points of your doctoral study) and of a Kindergarten teacher (i.e. leading you every step of the way, explaining everything you need to know). Thus, to successfully complete your doctorate, you must be able to work in a self-directed and autonomous way. This means that you must take the initiative to determine your learning needs, identify resources you need, and adopt suitable learning strategies. You must be able to critically assess your knowledge and skills, and to identify information and skills that you are still lacking (e.g. regarding how to search effectively for relevant literature, how to manage the many articles you read, how to write a research proposal or how write a manuscript for a journal). You will need to demonstrate initiative, self-organisation, and self-discipline to fill these gaps. It is thus necessary that you gather information and learn skills through discussing with peers, taking courses, reading books and searching for relevant information on the Internet, instead of just relying on your supervisor to ‘tell you’ (ideally without you even asking!??).

There are many books as well as websites discussing the meaning and goals of a doctoral education, as well as providing useful information on issues and challenges in completing a doctorate. Most of

the sites in English will be tailored to the academic requirements and administrative procedures in the UK or the USA, so you might need to distinguish the information which is applicable to Austria and which is not. However, there is still a lot of important, helpful and relevant information e.g. on the characteristics of good research, on standards for scientific texts, on how to organise your reading and how to build effective writing habits, as well as the importance of networking and soft skills. It is thus strongly recommended that you read at least one of the books in this list, or any other similar book that addresses your needs, as well as visit various websites, e.g. those listed below. This type of reading is, obviously, additional to the scientific reading you need to do, e.g. on scientific theories related to your research question, on methods of data collection and analysis, on previous research that will be part of your literature review.

Recommended books

Belcher, W. (2009) *Writing your journal article in 12 weeks. A guide to academic publishing success*. Thousand Oaks: Sage. (approx. 30 €)

This book focuses exclusively on writing manuscripts that you will submit to journals. The examples provided are mostly taken from social sciences, but the book is very good also for interdisciplinary work (it may, however, be less applicable to purely natural sciences publications, which have slightly different requirements). It provides comprehensive information from what type of information needs to be in the introduction, methods, results, conclusion sections of a paper, as well as how to handle journal editors and deal with the reviews once you receive them.

Lovitts, B. and Wert E. (2009) *Developing quality dissertations in the social sciences. A graduate student's guide to achieving excellence*. Sterling: Stylus Publishing. (approx. 8€)

This little booklet explains what the purpose of a dissertation is, and the criteria by which it will be assessed. It is based on extensive interviews of many professors to make their benchmarks for excellence clear: what do they expect and how do they assess the work of graduate students?

Philips, E. and Pugh, D. (2005) *How to get a PhD. A handbook for students and their supervisors*. 4th Edition. Maidenhead: Open University Press. (approx. 23 €)

This book was written for the UK (thus some information is not relevant, e.g. on the MPhil or on the specifics of the examination procedure). But it has very valuable (and highly readable) chapters e.g. on "The PhD process" (psychological and practical aspects) and "How to manage your supervisors" (covering issues such as: what supervisors expect of their doctoral students, reduce the communication barrier, etc.).

Single, P. (2010) *Demystifying dissertation writing. A streamlined process from choice of topic to final text*. Sterling: Stylus Publishing. (approx. 15 €)

This book focuses on the various writing aspects of a PhD, giving you valuable information on how to develop good writing routines, organize your literature by taking notes based on the papers you read, how to write in a clear, concise and compelling way, etc. Since your PhD is first and foremost a written product, these skills are key to successfully completing your PhD.

Examples of websites

PhD life: <http://www.findaphd.com/students/life.asp>

A nice collection of links to be found in the section "Advice, information and sideways looks at PhD life"

PhD comics: <http://www.phdcomics.com/comics.php>

A humorous depiction of life as a graduate student, recommended as it helps to know that what you are going through (e.g. motivation lows, feeling lost or overwhelmed) are a 'normal' phase in a PhD

