



Guideline for the Master Thesis

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When	Duration	Where	Workload	Credits
4th term	20 weeks	At institutions dealing with practical Environmental Toxicology tasks	900h	30

Your EnviTox master thesis will be your masterpiece within this study programme. As such, the master thesis not only needs to fulfil the formal requirements according to the examination regulations— it must be your concise, well-structured and crisp elaboration of a water-related research study. It must show that you're able to conduct a project according to scientific standards, that you know scientific methods and are able to apply them in the context of Environmental Toxicology. Furthermore, your master thesis should fine-tune your soft skills, such as the concise communication of a topic, the discussion with collaborators and the presentation of findings to inform both collaborators and the general public. This chapter is meant to guide you through the different steps of a master project, from planning the project until the submission of your thesis. Particular focus is laid on the practical implementation. Templates and forms required, and some useful information and checklists can be found in the Annex.

General consideration

What is the goal of a master project? In the following, discrimination is made between the master project and the master thesis. The master project refers to the entire setting of your research study, including the structural and content-related set-up of your research topic with your supervisors, the generation of data and information and finally the drafting and submission of your master thesis. Thus, the final product (master thesis) is part of your master project. The goal of your master project is to show that you can master the elaboration of a self-defined EnviTox-related topic according to state-of-the-art methods and in line with scientific standards. In order to be attractive to others, this topic should be new—a master project must not be the repetition of another study, be it another graduate thesis or a publication (e.g., paper, report).

Prerequisites

Provided that you already gained 75 credits, the master project will cover the entire 4th term, i.e. the last 20 weeks of your EnviTox programme.

Planning and Implementation

What do you do, and where?

In any case, you should contact EnviTox lecturers on forehand, i.e. before you enter the the third term, to learn more about the topics offered by the involved universities and by external institutions. Two major questions may guide your decision on both the topic and host institution of your master project:

1. What is your favourite topic in EnviTox?
2. Where do you wish to work in the future?

If you already know the answers to both questions, you are quite lucky and can start approaching candidate host institutions for your master project. If you still lack the answers to the questions or if you know them but your preferred topic is different from future job wishes, the question remains: What do you want? If you wish to gain practical experience, a company or equivalent institution may fit your purpose best. If you wish to train certain skills, for instance, statistical data analysis, a research institution/university would be a suited host. If you wish to work on the global perspectives of water management, a globally active NGO or enterprise may be the best option to conduct a master project.

Note: If you consider a scientific career a master thesis at UDE is advisable!

Given the manifold different aspects that may guide the decision on the topic and host institution, it is impossible and impracticable to provide a long list of topics and institutions. Instead, you should discuss your ideas and its implementation with those EnviTox lecturers that fit your ideas best with respect to their expertise. The earlier you start thinking about your master project, the better you will be able to structure your ideas and find the best possible combination of topic and host organisation. Tentative master project topics and possible authorities/institutions to conduct and supervise your study are basically the same as already listed for the Internship.

The location

The first option is to plan your master project at the UDE. Each lecturer involved into EnviTox regularly offers topics for master projects. This is particularly advisable if you seek a career in science, but given the applied focus of most working groups involved into EnviTox lecturing also many practical topics are available. The main advantage of a master project at UDE is the close supervision by experienced lecturers in combination with being embedded into a scientific research group. Alternatively, the selection of a suited affiliation may already be driven by your job wishes. This may even be a local/regional company, provided that the institution offers the opportunity to conduct the kind of self-contained work as described before. If you wish to work on global aspects, you should look for NGOs or other institutions that address the global perspectives of Environmental Toxicology. The supervision/assessment of any master project by lecturers from UDE will ensure that your master project and thesis are in line with the scientific standards set to gain a MSc EnviTox, irrespective of the affiliation of your master project.

Supervision at external institutions and UDE

In contrast to the Internship, your master thesis will be assessed by two assessors. You can designate a first and a second assessor. The first assessor has to be a member of the Faculty of Biology or the Faculty of Chemistry at the UDE. He/She has to teach within the EnviTox curriculum and has to be a Professor or a so called “private lecturer” (Privat Dozent). You should check this with your candidate assessors before you register your master project. Both assessors may also act as supervisors of your project, which means that you should not hesitate to contact them on any question dealing with the planning, structuring, implementation of your master project. Typically, the first assessor will act as the main supervisor, but both should be provided the opportunity to comment on critical steps during the planning and implementation of your project. The better you keep your assessors involved, the easier will it eventually be for them to objectively assess your thesis. In case your master project is hosted at an external institution, you will need a day-to-day supervisor at the host institution, who will then probably become your main supervisor. You should make sure that your assessors at UDE are being informed regularly about the progress of your master project. There are three critical steps in your project that may require your action to get comments and advice by your assessors:

1. The planning phase, i.e. when you structure your project.

2. The drafting phase, i.e. when you almost finished the analysis and interpretation of results/findings.

3. The pre-submission phase, i.e. when the final draft of the thesis is compiled. At least your first assessor should be given the opportunity to comment on your plans, methods and methodological approach, your findings and draft texts. Your assessors will be the persons in charge of assessing and grading your master thesis. The grading will be done after consultations with your day-to-day supervisor. This will help ensure a high degree of comparability among the students, as the UDE supervisors apply the same standardized benchmark for grading.

Registration

Registration of your master project is mandatory!

For registration you need to complete a registration form (see also Ilias) before you start your project. The form must be signed by your first assessor (in this case based at UDE) and by your external supervisor (if applicable). Further it has to be signed by the head of the examination board! In order to get his signature you have to submit a short Exposé of your thesis, which briefly describes the aim of your project and the methods you plan to perform. This Exposé should not exceed one page! The signed registration form has to be submitted in the examination office (Mrs. Schäfer). Once submitted, your project is registered. The deadline for submission of your master thesis is indicated on the registration form (= start plus 20 weeks).

Please submit your signed registration form to:

University of Duisburg-Essen, EnviTox Examination

Office, Universitaetsstrasse 2, 45141 Essen,

Germany.

Master thesis

The final outcome of your master project is the master thesis. The report language is English or German. The extent of a master thesis is strongly dependent on the topic. As a rule of thumb, the text body of a master thesis (from the Introduction to the Conclusions) has to be between 60–100 pages. Extensive annexes with original tables and materials may add to this. The master thesis is due on the deadline as indicated in the regis-

tration form. Your thesis must include a standard front page and a signed declaration that you prepared the thesis yourself and that all external sources of information are cited appropriately. A template front page and declaration can be found in the annex.

Implementation

- We strongly recommend that you elaborate a structure and time plan for the different tasks of your master project already before you start. Such a structure might look like a simple list of steps to work on, such as “preliminary assumptions”, “research questions”, “required data”, “methodological approach”, “expected results”, “literature to be consulted”, etc. You may also try to structure your list already like a report, so that your list might already work as a kind of table of contents of your master thesis. A typical structure for research-like reports is:

- Summary (brief, concise, understandable)

- Introduction (What do you do why? How is the current knowledge? What are the knowledge gaps?)

- Material and Methods (What data do you use? How did you gain the data? How did you analyse the data and present the results. The meaning of data is quite unspecific; they may derive from field samples, literature reviews, personal interviews, maps, or remote sensing.)

- Results (Just the outcome of your analysis, no further discussion or description of the methods. Be precise and avoid redundancy!)

- Discussion (The discussion of your findings in context with the existing literature, expert knowledge, etc. A thorough discussion will show that you consulted the literature and critically scrutinised your findings.)

- Conclusions (What conclusions can be drawn from your study. Avoid overlap with the discussion and concentrate, for example, on potential applications in future water management, or implications for current water management.)

- Acknowledgements (Just say thank you to the people and institutions that provided assistance and support, that may have cofinanced your work or that supervised your Internship.)

- Literature (Must be complete, i.e. all citations in the text body must be listed here, and must not be redundant, i.e. must not contain references that are not cited in the text body. See Annex for citation styles for journal articles, books, etc. Be consistent!).
- Appendix (Supplementary material, such as long lists of raw data, original records of interviews, data sheets of literature reviews, forms and protocols used for data generation, etc.)

Your assessors and supervisor will be happy to help you define an appropriate structure for your master thesis—ideally prior to the start or during the first two weeks. The better you prepare this important step beforehand, the better will you be able to effectively use the time on-site.

Frequent guidance and opportunities to handle rising questions and problems is being offered by your day-to-day supervisor and/or first assessor. Don't forget to frequently keep your first (and second) assessor update with major milestones achieved, with important intermediate results, but also with problems you encountered. He/she will also be happy to provide guidance and solutions.

Note: You should also make yourself familiar with the formal requirements of master thesis, which are provided, for instance in the examination.

Besides, don't hesitate to contact your assessors and supervisor for additional advice—they will be happy to help you!

Please note: At the UDE you can print the copies of your Master Thesis for free. Just ask the IT-Service for help.

At UDE, **three** printed and bound copies of your master thesis must be submitted in addition to :

University of Duisburg-Essen, Environmental Toxicology

Examination Office, Universitaetsstrasse 2,

45141 Essen, Germany,

either by mail or personally (check office times before you plan to submit personally!). Before you submit your master thesis, please make sure that the formal requirements (e.g., front page, declaration that you did the thesis yourself, citation of all foreign sources of information, consistent list of references [see Annex]) are fulfilled and that the language style has been revised by at least one additional person. This might be a fellow EnviTox student, but you may also consider a friend to check for the language style and errors, both of which do not require specific expertise in Environmental Toxicology to check the grammar and style. Besides, you should thoroughly check that all tables and figures are being numbered appropriately and that the contents of tables and figures are readable. If you intend to prepare black/white copies of the thesis, you should avoid coloured figures with low contrast that may look alike if converted to grey scale. Such mistakes do not require much time to be avoided, but they will have much impact on the assessment.

Please note: If you fail to submit your thesis in time (i.e. 20 weeks after registration) your thesis will be graded as “not passed”.

If you cannot meet the deadline, for instance, due to unforeseen problems during the implementation phase or due to an illness you contracted, you need to inform your first assessor about the delay in due time before the submission deadline. **Any extension of your master project requires a written application not later than one week prior to the submission deadline to the head of the examination board** (see the UDE examination regulation for details). The extension requires a formal approval by the UDE examination board and may be refused, if the application is inconsistent or poorly justified. There is only one extension possible with duration of up to eight weeks in addition.

Presentation

The oral presentation of your master thesis is mandatory and is subject to grading of your entire master project. The presentation should address a wider audience of undergraduate and graduate students, lecturers and persons from external institutions. It should summarise your research questions, methods, results and conclusions. The final presentation is also meant to defend your thesis against criticism. This type of communication and discussion of scientific outcome is part of the key competences of an environmental toxicologist and should be thoroughly prepared.

The presentation will take place at the UDE or at the external institution. Please consult your first assessor and external supervisor (if applicable) for a decision on the final ven-

ue of the master presentation and don't miss to invite the second assessor. You should also think about potential invitees you would like to invite yourself, for instance, fellow students, colleagues at the external host of your master project or friends and the family. Don't forget to check the available space before you start inviting the people.

Assessment and grading

Your master project will be assessed and graded by two assessors. If you conducted your master project at an external institution, your first assessor will also contact your day-to-day supervisor there to get his/her opinion on your master thesis and your overall performance. The final grading will be based on the assessment of your overall performance, your master thesis and your final presentation. Before the assessors report their final assessment to the examination office at the first assessor's university, they briefly discuss their assessment. The first assessor is in charge of calculating the final grade and transferring your grade to the examination office at his/her university. Before the grade is being transferred, however, the first assessor will discuss his/her assessment with you.

Graduation

Once you have finished your all courses, the internship and the master thesis your Diploma will be prepared by the examination office. You can get it directly after its finalization or you wait until the graduation party, which will be held every year in October.

You and your family are warmly invited to take part in the celebration. Of course you will get an official invitation from us.

. Checklist for planning and implementing an EnviTox master thesis

<i>Status</i>	<i>What</i>	<i>When</i>	<i>Persons involved</i>
Planning			
	Discuss your ideas for the master project with a EnviTox lecturer related to the topic	The earlier, the better, but ideally during the 3 rd term	
<input type="checkbox"/>	If applicable, contact suited external host institutions on their potential to supervise a master thesis and to provide you a workplace	The earlier, the better, but during the 3 rd term at the latest	Contacts at your desired candidate institutions
<input type="checkbox"/>	Define and discuss a tentative master project topic with your 1 st assessor and external supervisor (if applicable), elaborate a work and time plan	During the 3 rd term at the latest	1 st assessor at UDE and external supervisor (if applicable)
<input type="checkbox"/>	Select and inform your 2 nd assessor	Prior to the start of your master project	Lecturers at UDE
Implementation			
<input type="checkbox"/>	Check the examination regulations for detailed specifications on the master procedure	The earlier, the better, but before the start of the master project at the latest	
<input type="checkbox"/>	Check if all required credits have been achieved for graduation and if all formal requirements for graduation are being fulfilled	Several weeks prior to submission of your master registering form	Examination office
<input type="checkbox"/>	Prepare an Exposé of your project and sent it to the head of the examination board	Several weeks prior to submission of your master registering form	Head of examination board
<input type="checkbox"/>	Register your master project at the examination office	Prior to the start of your Master project	1 st assessor, head of examination board, examination office
<input type="checkbox"/>	Keep your assessors and supervisor(s) informed about your progress	At least twice during the implementation and drafting phase of the Internship report	Both assessors and external supervisor(s) (if applicable)
<input type="checkbox"/>	Get feedback on a draft version of your report	Four weeks prior to submission, at the latest	1 st assessor and external supervisor(s)

			(if applicable)
<input type="checkbox"/>	Apply for an extension due to an illness or due to unforeseen problems (if applicable)	One week prior to the submission deadline, at the latest	examination board through your 1 st assessor
<input type="checkbox"/>	Submit your master thesis in 3 printed and bound copies	Deadline as indicated on the registration form	Assessor and examination office at UDE
Finalisation			
<input type="checkbox"/>	Arrange a date and venue for your master presentation at your first assessor's university or at the external supervisor's affiliation	Prior to or within 4 weeks after submission of your master thesis	1 st assessor and external supervisors
<input type="checkbox"/>	Invite 2 nd assessor to the presentation	Two weeks prior to the date at the latest	2 nd assessor, optionally invited by the 1 st assessor

Master Registration Form (can be found in ILIAS)

Original an Prüfungsamt <i>original copy to examination office</i>
Kopie an Prüfungsausschuss / <i>Copy to examination board</i>
Kopie an Erstprüfer / <i>Copy to 1st examiner</i>
Kopie an Student/in / <i>Copy to student</i>
Vermerk / <i>Remark</i>



Anmeldung zur Master-Abschlussarbeit *Application for Master Thesis*

nach Verkündungsblatt 9/103 vom 06. Oktober 2011 / *according to examination regulation EnviTox*

Name, Vorname <i>Surname, first name</i>		
Matrikel-Nr. <i>Matriculation number</i>	Fachsemester <i>Study term EnviTox</i>	

(Arbeits-) Titel der Abschlussarbeit / (Working) Title of Master Thesis

<p>Ich versichere, dass ich die Arbeit selbstständig verfassen werde, keine anderen als die angegebenen Quellen und Hilfsmittel benutzen sowie Zitate kenntlich machen werde. <i>I declare that I will prepare the thesis without any help from others and without the use of documents and aids other than those indicated.</i></p>
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Erstprüfer/in / *1st examiner*

Name, Anschrift, Emailadresse, Telefon/
Name, Adress, Emailadress, Phone

Zweitprüfer/in / *2nd examiner*

Name, Anschrift, Emailadresse, Telefon/
Name, Adress, Emailadress, Phone

Datum Beginn der Abschlussarbeit
Start of the Master Thesis

Abgabetermin der Abschlussarbeit: (Bearbeitungsdauer: 6 Monate)
Deadline for Master Thesis (Duration: 6 month)

Essen, den _____
Date

Unterschrift der Studentin / des Studenten
Signature of student

Essen, den _____
Date

Unterschrift der Erstprüferin / des Erstprüfers
Signature of 1st examiner

Essen, den _____
Date

Unterschrift des Prüfungsausschussvorsitzenden
Signature of head of the examination board

**My Master Thesis Title that should be tangible, informative, short and 'sexy',
and that should already provide the reader with
an idea of what it is about**

Internship Report

Environmental Toxicology (EnviTox)

Supervised by: Indicate the name of your internal supervisor at UDE and his/her affiliation
In cooperation with: Indicate the name and affiliation of your external supervisor , if applicable

submitted by

First name + Initials + Surname

from Place of Birth
November 2007

Template Master Declaration/ This page has to be included into your Master Thesis

This Master Thesis has been prepared and written according to the Examination Regulation of the Master Programme Environmental Toxicology at the University Duisburg-Essen. This includes all experiments and studies carried out for the Master Thesis.

The Thesis has been written at the XYZ (*name University, Faculty; external Institution...*)

1st Assessor:

2nd Assessor:

Head of Examination Board at 1st Assessors' University:*

*Not to be completed by the student.

Declaration

I declare that I have prepared this Master Thesis self-dependent according to § 20 of the Examination Regulation of the Master Programme Environmental Toxicology published at 06. Oktober 2011 at the Faculty of Biology at the University of Duisburg-Essen.

I declare that I did not use any other means and resources than indicated in this thesis. All external sources of information have been indicated appropriately in the text body and listed in the references.

Essen –, Date

Signature of the Student

Rules for citations and references to the literature

When citing references to the literature, the most important rule is: Be consistent! Follow the same style for journal articles, books, edited books, websites, or any other source of information throughout your entire list of references. Don't mix different journal or book citation styles; inconsistent style = bad style!

During your literature search, you may realise that almost every journal has its own distinct citation style for journal and book references, so you cannot simply copy and paste citations from different journals into your report.

The following example is meant as a suggestion to provide some orientation. The example is taken from the instructions for authors of the journal *Water Resources Management* (<http://www.springer.com/earth+sciences+and+geography/hydrogeology/journal/11269>), but has been slightly modified.

Citation style in the main text body:

Cite references in the text by name and year in parentheses. Some examples:

Negotiation research spans many disciplines (Thompson 1990).

This result was later contradicted by Becker and Seligman (1996).

This effect has been widely studied (Abbott 1991; Barakat et al. 1995; Kelso and Smith 1998; Medvec et al. 1993).

“et al.” stands for “and other authors” in case more than two authors contributed to an article or book chapter.

Reference style in the list of references:

The list of references should only include works that are cited in the text. Personal communications and unpublished works should only be mentioned in the text. Do not

use footnotes or endnotes as a substitute for a reference list. Reference list entries should be alphabetized by the last names of the first author of each work.

Journal article:

Gamelin FX, Baquet G, Berthoin S, Thevenet D, Nourry C, Nottin S, Bosquet L (2009) Effect of high intensity intermittent training on heart rate variability in prepubescent children. *European Journal of Applied Physiology* 105:731–738.

Ideally, the names of all authors should be provided, but the usage of “et al” in long author lists will also be accepted:

Smith J, Jones M Jr, Houghton L et al (1999) Future of health insurance. *North England Journal of Medicine* 965:325–329.

Article by DOI in case a journal article is published online early, yet without allocation to a journal volume, issue and pagination:

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. *Journal of Molecular Medicine*. doi:10.1007/s001090000086.

Book:

South J, Blass B (2001) *The future of modern genomics*. Blackwell, London, 357 pp.

Book chapter:

Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) *The rise of modern genomics*, 3rd edn. Wiley, New York, pp 230–257.

Online document:

Cartwright J (2007) Big stars have weather too. IOP Publishing PhysicsWeb. <http://physicsweb.org/articles/news/11/6/16/1>. Accessed 26 June 2007.

Dissertation, Master/Bachelor/Diploma Thesis:

Trent JW (1975) Experimental acute renal failure. Dissertation, University of California, 157 pp.

Report:

EEA (European Environment Agency) (2007) Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe. EEA technical report 11/2007, Luxembourg, 38 pp.