

## EnviTox Internship Guidelines

<i>When</i>	<i>Duration</i>	<i>Where</i>	<i>Workload</i>	<i>Credits</i>
3 <sup>rd</sup> term	16 weeks	At institutions dealing with practical issues of Environmental Toxicology	660 h	22

This Internship guidance document is meant to provide some orientation about the planning and implementation of your internship. After some more general considerations of the aims and scope of the Internship, the practical implementation is explained step-by-step.

All templates and forms required, and some useful information and checklists can be found at the end of this document, which also contains a checklist for planning and scheduling your Internship.

### **General consideration**

#### **Why an Internship? The Goal**

EnviTox aims at educating the future Ecotoxicologists, i.e. you! In order to achieve this goal, practical education and application of the knowledge, tools and methods is required that have been taught during the first year in Essen. The Internship will help you identify EnviTox related questions and tasks in reality and solve them during interactive processes in research groups or in the industry. You will have the opportunity to get insight into the day-to-day business and learn the structure and processes of practical EnviTox, for instance, addressing producers of chemicals in line with the application of REACH or the tracking of substances in the environment or testing the effects of substances on individuals and populations. Be practical!

#### **What is an Internship? The Content**

The content *must* be related to Environmental Toxicology. The ideal EnviTox internship fulfils several of the following criteria:

It is set-up as a **well-defined** and **independent task**, developed by the student in cooperation with his/her supervisor at an external or university institution/authority. Well-defined means that the internship is planned *a priori* and that the structure is already being developed *before* the start or during the very first period of the Internship. Independent says that the content should ideally be a kind of small project/task that may be embedded in a larger project or regular management goal of the institution, but that is defined as a bit of work independently elaborated by the student.

This set-up also facilitates the elaboration of a structured report, which does also constitute a good training for the final master thesis.

#### **Where can I do Internships? The Location**

Given the goals and contents as discussed above, the clear recommendation regarding the location of your Internship is: be practical! You should look for an internship in the chemical or pharmaceutical industry, NGO, private enterprise, governmental institution, international, university groups or other institution that is dealing with *practical* issues regarding Environmental Toxicology. 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.

Basically, you can do an internship worldwide – there are no limitations. Except, of course, for the money you will need for travelling and daily subsistence during the stay abroad.

### **When should I do my Internship? The Timing**

The Internship is scheduled for the third term. The exact timing is also dependent on the two block courses of the module European environmental legislation which will take place in the beginning of the winter term (October).

If you plan to include some field work into your Internship, you should try to avoid the winter months, which are usually less suitable for many outdoor topics. This is, of course different, if you plan to do your Internship in a country south of the equator.

There is an option to combine the Internship and the master project into one larger project of 9 months duration. In this case, you need to finish all other courses before you start the combined Internship/master project. Such a combination offers new perspectives for those, for example, who want to include some field work in their project, which usually extends the working time significantly. In particular, if you have to travel a lot or if you depend on certain weather conditions to conduct the fieldwork. But combining both projects might also be attractive to those of you who wish to dive more into the depth of a specific topic.

On the other hand, you should consider some potential disadvantages before you decide to combine the Internship and master project. The level of “practicality”, for instance, would be significantly reduced if you conduct a combined project at a research institution. This may become a disadvantage, if you strive for a career in practical Enviro tasks. But it may be advantageous, if you wish to continue an academic career. Thus, we strongly recommend to discuss your individual options with your EnviTox lecturers in due time in order to assist you decision.

### **What about costs? Funding schemes and opportunities**

We are not aware of any institution or organisation that has charged fees for an Internship. Thus, in general, the costs should not differ from those you had during the same time period in Essen. This will be different in case you would have to spend extensive travel costs, for instance, for flights to North America, Asia or South America, which would pose some €1500–€3000 in addition (return tickets).

There is no travel budget available at UDE to cover Internship travel costs.

### ***Planning and Implementation***

#### **What do you do, and where?**

The first question you need to answer yourself is: What do you want to do in your Internship? The topic will then largely influence the second question: Where?

Do you prefer a topic including some fieldwork? Are you interested in statistical data analysis? Do you wish to apply predictive modelling? Are you interested in toxicological test systems? Do you want to compare the implementation of REACH in two countries? These topics are different and require different kinds of data, different methods and (software) tools for data analysis, different degrees of discussion and different involvement of people’s opinions. This list is far from being complete and shows the almost unlimited opportunities for you to plan and conduct your Internship—as long as your topic deals with tasks of Environmental Toxicology.

The following table is meant to provide some first suggestions on where you might do best an Internship depending on the general topic.

Tentative Internship topics and possible authorities/institutions to conduct and supervise an Internship.

<i>Topic</i>	<i>Authority/institution</i>
Monitoring of substances in ecosystems (soil, sediments, water, animals, plants)	NGOs, universities, regional/national authorities (e.g., Federal Agencies, EEA, water boards)
Toxicological test on chemicals, pharmaceuticals, pesticides	Chemical or pharmaceutical industry
Risk assessment of chemicals	Universities, chemical companies
Ecological assessment of ecosystems (e.g., rivers, wetlands, forests, lakes, marine systems, )	Universities, private consultants and enterprises on spatial planning and management, water boards, provinces, European Environment Agency (EEA)
Implementation of new analytical methods to monitor substances	Universities
Fundamental research on effects of substances on cell, organism or population levels	Universities, NGOs, Federal Agencies

It is recommended that contact your desired EnviTox supervisor at UDE in due time ahead of the Internship in order to discuss your plans and to structure the work.

### **Supervision at external institutions and UDE**

In general, you will be supervised by two persons, one of which is a EnviTox lecturer (internal supervisor) at UDE, and the other is an employee at the external institution (external supervisor). This applies to the majority of Internships that are being conducted at non-university institutions. If you decide to do your Internship at an external university (i.e., not at UDE), the supervision will be similar: one external supervisor at the external university and one internal supervisor at RU or UDE. In some cases, you may decide to conduct your Internship at UDE. In this case, only one internal supervisor at the university will be required.

Your internal supervisor at UDE will be the person in charge of assessing and grading your Internship. The grading will be done after consultations with your external or internal day-to-day supervisor(s). This will help ensure a high degree of comparability among the students, as UDE supervisors apply the same standardised benchmark for grading.

### **Registration**

Registration of your Internship is mandatory! The registration form is provided in Annex II and must be completed before you start your Internship. You need to let it signed by your internal (UDE) and external supervisor(s) before you hand over the form to your study coordinator. Hence, your Internship is registered at UDE (Nadine Ruchter: [nadine.ruchter@uni-due.de](mailto:nadine.ruchter@uni-due.de)).

The deadline for submission of your report is indicated on the registration form (= start plus 16 weeks). The report must be submitted to your internal supervisor by the deadline. 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 internal supervisor at least two weeks before the deadline about the delay. Any extension of your Internship requires the approval by your internal supervisor.

## **Implementation**

After you thoroughly planned and registered your Internship, it's time to start the work. We recommend elaborate a structure and time plan for the different tasks of your Internship 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 Internship report. A typical structure for research-like reports is:

1. Summary (brief, concise, understandable)
2. Introduction (What do you do why? How is the current knowledge? What are the knowledge gaps?)
3. 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.)
4. Results (Just the outcome of your analysis, no further discussion or description of the methods. Be precise and avoid redundancy!)
5. 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.)
6. 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.)
7. Acknowledgements (Just say thank you to the people and institutions that provided assistance and support, that may have co-financed your work or that supervised your Internship.)
8. 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 VI for citation styles for journal articles, books, etc. Be consistent!).
9. 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.)

For other kinds of Internship topics, the report structure may look different. Your supervisors will be happy to help you define an appropriate structure for your Internship report—ideally prior to the start or during the first two weeks. The better you prepare this important step on 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 (most often external) supervisor. Don't forget to frequently update your internal supervisor at UDE 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. As a rule of thumb, your internal supervisor should be at least informed (ideally: involved) in the definition/structure of your

research topic, in the discussion of preliminary results/problems and in the revision of the draft report. This will help ensure that your report is in line with the formal requirements as defined in this document. Besides, don't hesitate to contact your supervisor's for additional advice—they will be happy to help you!

### **Final report and “field” report**

The final outcome of your Internship is compiled in the Internship report. The report is due on the deadline as indicated in the registration form and must be submitted in two printed and bound copies to your internal supervisor at UDE. Make sure that the formal requirements (citation of references) 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 EnviTox. The report language is English.

Besides, a so-called “field report” is required to gather some more general information about the institution where you conducted your internship and about your experiences there. The field report will help future generations of EnviTox students find appropriate organisations and contact people for their Internship. The template field report can be found at the end of this document. Please submit the completed field report not later than four weeks after submission of your Internship report to Nadine Ruchter, [nadine.ruchter@uni-due.de](mailto:nadine.ruchter@uni-due.de).

### **Presentation**

We offer each student the opportunity to present his/her Internship findings to a wider audience of undergraduate and graduate students, lecturers and managers from external institutions. The presentation is facultative and will not be subject to any grading. Nevertheless, we strongly recommend such a presentation that will provide invaluable training to improve your “soft skills”. Furthermore, you can practice to “sell” your results to a wider audience and defend them against criticism. This type of communication and discussion is part of the key competences of an Ecotoxicologist. Don't miss this opportunity!

In many cases, external supervisors may ask you for a presentation, anyway, as they want to disseminate your findings to a broader audience within their organisation. Don't forget to inform those you want to share the presentation with you (and the internal supervisor at UDE) on beforehand, if there's sufficient space available.

### **Assessment and grading**

Your Internship report will be assessed and graded by your internal supervisor at UDE. Therefore, the internal supervisor shall contact your external (day-to-day) supervisor for his/her appraisal and advice. Hence, the grading will account for unforeseen incidences and other problems that may have occurred during your Internship. The consultation of your day-to-day supervisor will also help assess your soft skills as listed in the Internship Assessment Form.

The internal supervisor is in charge of transferring your grade to the examination office at his/her university. Before the grade is being transferred, however, the internal supervisor will discuss his/her assessment with you.

## ANNEX

### I. Checklist for planning and finalising a TWM Internship.

<i>Status</i>	<i>What</i>	<i>When</i>	<i>Persons involved</i>
<b>Planning</b>			
<input type="checkbox"/>	Contact external host organisations on their potential to supervise an Internship	Any time prior to the 3 <sup>rd</sup> term, but ideally during the 2 <sup>nd</sup> term	Contacts at your desired candidate institutions
<input type="checkbox"/>	Check possible funding schemes applicable to your Internship	Six to twelve months prior to your Internship, depending on the funding scheme/scholarship programme	Contacts at funding organisations, TWM study advisors at UDE (Nadine Ruchter)
<input type="checkbox"/>	Define and discuss a tentative topic with the external supervisor, elaborate a work and time plan	Ideally during the 2 <sup>nd</sup> term, but prior to the 3 <sup>rd</sup> term	Day-to-day (external) supervisor
<input type="checkbox"/>	Look for internal supervisor at UDE and discuss your work and time plan	Prior to the 3 <sup>rd</sup> term	Lecturers at UDE
<b>Implementation</b>			
<input type="checkbox"/>	Register your Internship	Prior to the start of your Internship	Internal supervisor at UDE
<input type="checkbox"/>	Keep your supervisors informed about your progress	At least once during the implementation and drafting phase of the Internship report	Internal and external supervisors
<input type="checkbox"/>	Get feedback on a draft version of your report	Two weeks prior to submission, at the latest	Internal and external supervisors
<input type="checkbox"/>	Submit your Internship report in two printed and bound copies	Deadline as indicated on the registration form	Internal supervisor
<input type="checkbox"/>	Apply for an extension due to an illness or due to unforeseen problems	Two weeks prior to the submission deadline, at the latest	Internal supervisor, but check with your day-to-day supervisor on beforehand
<b>Finalisation</b>			
<input type="checkbox"/>	Present your findings to a wider audience at the external supervisor's institution or/and at the UDE	Depends on your external supervisor, but ideally not later than four weeks after submission of the Internship report	Internal or external supervisors
<input type="checkbox"/>	Submit Internship field report	Four weeks after submission of the Internship report, at the latest	EnviTox study advisor at UDE (Nadine Ruchter)

## II. Internship Registration Form

### Notification for internship (EnviTox, third term)

Name:

Student number (UDE):

Information on the internship
Working titel of the internship report:
Internship is done at <input type="checkbox"/> UDE, <input type="checkbox"/> Radboud, Name of working group:
Or somewhere else: <input type="checkbox"/> Industry/Water boards/Federal Agency <input type="checkbox"/> other University/research centre <input type="checkbox"/> other ..... <input type="checkbox"/> in Germany <input type="checkbox"/> somewhere else
Name and address of the institution:
Supervisor* at the institution of the internship:
Duration of the internship:
Additional comments (reasons for extending the internship/Remarks on special circumstances and striking performances/shortcomings of the student/
Name of assessor*:  _____
Signature Assessor*

**\* Your assessor is the person who will read and grade your report; your supervisor is the person who supervises you during the internship. This can be different persons.**

**Please send this notification 21 days in advance of the internship to: Nadine Ruchter, University of Duisburg-Essen, Faculty of Biology, 45141 Essen, Germany ([nadine.ruchter@uni-due.de](mailto:nadine.ruchter@uni-due.de))**

### III. Template Internship Report

**My Internship Report 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



#### IV. List of candidate institutions

<i>Name</i>	<i>City, country</i>	<i>Topics</i>	<i>Information URL</i>
<u>Industry</u>			
Goldschmidt (part of Evonic)	Essen, Germany	Environmental Analytics	<a href="http://www.goldschmidt.com/Default.asp?rerun=1">http://www.goldschmidt.com/Default.asp?rerun=1</a>
Bayer Crop Science	Leverkusen, Germany	Plant health, controlling pests, Bee health and crop protection	<a href="http://www.bayercropscience.com/bcsweb/cropprotection.nsf/id/EN_Biodiversity_Research_and_Development">http://www.bayercropscience.com/bcsweb/cropprotection.nsf/id/EN_Biodiversity_Research_and_Development</a>
Currenta	Leverkusen, Uerdingen, Germany	Biomonitoring (blood, urin) Environmental Analytics REACH	<a href="http://www.analytik.currenta.de/index.php?page_id=160">http://www.analytik.currenta.de/index.php?page_id=160</a>
BASF	Limburgerhof, Germany	Developing of pesticides and herbicides, plant health	<a href="http://www.agro.basf.com/agr/AP-Internet/en/content/competences/r_and_d_strategy/index?mid=0">http://www.agro.basf.com/agr/AP-Internet/en/content/competences/r_and_d_strategy/index?mid=0</a>
Evonic	Essen, Germany	Safety of nanoparticles	<a href="http://corporate.evonic.de/en/company/research_development/nano/carbosafe/Pages/default.aspx">http://corporate.evonic.de/en/company/research_development/nano/carbosafe/Pages/default.aspx</a>
<u>Federal agencies</u>			
Lanuv (Landesamt für Natur, Umwelt und Verbraucherschutz NRW)	In different cities of NRW, Germany	Monitoring and assessment of effects of substances on the environment	<a href="http://www.lanuv.nrw.de/wuebu/abteilung3.htm">http://www.lanuv.nrw.de/wuebu/abteilung3.htm</a>
BFG (Bundesamt für Gewässerschutz)	Koblenz, Germany	Monitoring of substances in water systems Biotests, sediment tests, ecotoxicology	<a href="http://www.bafg.de/cln_007/nn_163442/G3/Home/homepage.html?__nnn=true">http://www.bafg.de/cln_007/nn_163442/G3/Home/homepage.html?__nnn=true</a>  <a href="http://www.bafg.de/cln_007/nn_163322/DE/02__Aufgabenfelder/02__Qualitativ/Labors,templateId=raw,property=publicationFile.pdf/Labors.pdf">http://www.bafg.de/cln_007/nn_163322/DE/02__Aufgabenfelder/02__Qualitativ/Labors,templateId=raw,property=publicationFile.pdf/Labors.pdf</a>
<u>Water boards</u>			
Emscher Genossenschaft	Essen, Germany	Monitoring of substances in rivers, especially in the Emscher tributary Effects of substances on populations (Macrozoobenthos)	<a href="http://www.eglv.de/wasserportal/ueberuns/karriere/praktikum.html">http://www.eglv.de/wasserportal/ueberuns/karriere/praktikum.html</a>

		Water Framework Directive Sanitation of groundwater	
Ruhrverband	Essen, Germany	Monitoring of substances in rivers, especially in the Ruhr tributary Waste water treatment Water Framework Directive	<a href="http://www.ruhrverband.de/en/wissen/wasserqualitaet/laboratorium/">http://www.ruhrverband.de/en/wissen/wasserqualitaet/laboratorium/</a>
<u>Research organisations, universities</u>			
All working groups involved in EnviTox lectures			Just ask your lecturers if an internship is possible within the research groups
IWW	Mülheim, Germany	Chemical and microbiological water quality; Biofilm-related problems in drinking water and process water	Just speak with Prof. Torsten Schmidt or Prof. Hans-Curt Flemming
ToxLab	Clinic Essen		Just speak with Dr. Elke Dopp

# V EnviTox Internship Field Report

*This Field Report will be made available for future EnviTox Students in order to assist them and help find an adequate institution for their internship. Please note that the completion of this form is facultative—you are not obliged to answer every question. Furthermore, you are invited to add other important information not specifically asked for if you think the information is valuable for future EnviTox students.*

*Thanks for your feedback, which will help develop EnviTox!*

## Contact Data of your Internship host institution

**Name of Institute/Working group/Company**

**Address**

**Scope/working area of the institution (e.g., regional management..., scientific advice to...)**

**Where did you get information from about the institution?**

- Internet
- Recommendation by a lecturer (name of the lecturer: \_\_\_\_\_ )
- Recommendation by others (please specify)
- Job advertisement of the institution
- other (please specify):

**Name of your external supervisor (i.e. at the institution):**

**Postal address of the external supervisor:**

**Email address of the external supervisor:**

## **Financial situation and support**

**If you stayed abroad, outside Germany: Please estimate your travel and living expenses?**

**Travelling:**

**Living/daily needs:**

**Where did you live, how did you organize housing and how much was it?**

**Did you have financial support, for instance, by a scholarship? If yes, which one?**

## **Personal experiences**

**Please describe your experiences of your daily work during your internship. What was your task? Which new methods did you learn? How good was the support of your external supervisor? Did you learn something new? Would you recommend the institution for future internships?**

**Your email contact, if somebody would like to ask you for additional information:**

**Please send this Internship Report latest four weeks after your submission of your internship report via Email to:**

**Nadine.ruchter@uni-due.de**

## VI. 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.