**Instructions for PhD theses, incl. the defense**

# Standard format / printing

* There is no standard layout from TU Berlin or our faculty 🡪 A template for the Chair of Bioprocess Engineering has been established, which is used now by everybody!
* Size, binding and cover should be as follows:
	+ Should be bound like a book (flexible material) with a figure on the cover (see PhD template).
	+ No ring binding!!
	+ On the book backbone (“Buchrücken”) the name, title, and year should be written so that it can be easily found in a cupboard (to read from the LEFT side).
	+ A4 or B5 can be used (B5 preferred), but should be printed as a flexible book with cover-figure as well.
* Please leave enough space on the borders for printing the cover and cutting the book. Bring an example from a colleague for easy understanding of what you want.

**NEW!! Please go to a bookbinder for binding your printed pages in order to have a high quality binding and cover material.**

* In a copy shop you can print your inner pages. **Please choose thick paper for the inner pages (at least 100 g/m2).**

In all shops of the “Kopierladen” (<https://www.kopierladen-berlin.de> ), we get 10% discount on printing a thesis. You just need to mention “TU Berlin, Fachgebiet Bioverfahrenstechnik” (see also Mail from Klaus Pellicer attached on page 9 of this document). Please ask them about the discount right at the beginning before you start printing.

* The establishment of a general template for the BVT is a changing process over time and feedback by all of you about the acceptance by the library / faculty is needed. Also with a template in future, individual exceptions will be possible if it is reasonable.

# Cumulative thesis vs. monography

* Cumulative is preferred, since more publications are generated and it requires less work by the student. Papers and manuscripts are attached at the end of the cumulative thesis.
* **Attention:** A cumulative thesis does not necessarily mean that it is less work or that it is much shorter compared to a monography. Most important: Your thesis (i.e. the text, which is evaluated by the reviewers) is the text in the main part and NOT the papers in the appendix, which have already been evaluated by other reviewers for the journal. Your thesis is a 1-author publication. In a cumulative thesis, the major aspects of your work are summarized and presented in a logical way. It is not allowed to have a self-plagiate of the text in the thesis part, which is already there in the papers – i.e. you must write the text in the thesis in a different way.
* If you only have 1-2 papers, the thesis is written as a monography. At least 1-2 publications should be written and accepted in parallel though.

# Special requirements for cumulative thesis

* At least 2 accepted papers and one manuscript (submitted) needed.
* Attach papers and manuscripts at the end of the thesis: formatted as in journal, with permission of the journal
* 🡪 complications occur with the TU library if the papers are formatted differently in the thesis. (*See also 8.*)
* An empty page containing the numbers of the papers (1-x) or (I-X) should be placed between the papers for separation.
* A general Results section (see also 4.11) should be written, which summarizes the results of all papers. It can contain sub-chapters, which might be divided according to the paper order or according to experimental series, or …
* For the figures of own articles permission has to be asked from the publisher as well (try to avoid copying figures).
* If a manuscript is attached, figures should not be placed in the end of the manuscript, but incorporated into the text.
* References: Leave the reference list after each paper and add a list of all references from the introduction, scientific review, results, and discussion at the end of the thesis (only 1 reference list for the thesis part), but before the Ten theses and the part with the attached papers.

# Sections of a PhD thesis

## Abstract:

* 1 page maximum
* Abstract is necessary in English AND German
* Content: One sentence introduction, background, aim of the work (scientific niche and how to solve it), results (most important, be specific, take it from the 10 Theses of the work), conclusion (importance to the field).

## List of content

Should be placed here because the following sections should be part of the content.

## Declaration of Originality (might be also at another position)

## Acknowledgements

* Must contain funding sources / financial support, incl. projects with project number.
* Must contain all people that contributed to thesis (as the thesis is a single person authorship publication and only in this chapter there is space to articulate contributions). Missing the announcement of contributors is a scientific fraud (same as if you would leave an author away in a publication).
* In cumulative thesis: also all co-authors of publications have to be listed.

## List of abbreviations (List of figures and tables can be skipped, not necessary)

## List of publications (cumulative case) 🡪 Complete publications attached in the end (see 4.16)

* Each entry in the list should end with EITHER (i) an active, clickable DOI link for papers that are already online, (ii) journal name and date of submission for papers that are in the review process OR (iii) the phrase “In preparation“ for manuscripts that still have to be submitted to a journal.
* The co-author contributions in the papers should be stated to show what each co-author did. Do not use percentage contributions (e.g. author A contributed x%)!, it should be stated exactly what each person did in the papers. Describe your own contribution for each of your papers as well.
* Such a list is also provided on an extra sheet to the faculty.

## Introduction:

* 1-2 pages max.
* Should introduce to the general subject of the thesis and sum up the structure of the work (overview).
* Has to describe the scientific gap, niche.
* Clearly different from literature review!
* Should not double with abstract!

## Literature review / scientific background:

* Presents state of the art.
* Should be like journal or book review. List most important articles in relation to thesis / your research.
* Focus on most recent articles / literature. (It is important to focus on articles of the last 3-5 years!!! to show that your research is at the edge of science.)
* Beside understanding of the topic it helps to connect to results and to discussion.
* Chapter can have subtitles, which represent the different subjects that have to be introduced.
* Own citing should be avoided and better placed into the results part (for cumulative thesis). Always avoid self-copying / self-plagiarizing!

But own review can be integrated as a chapter or parts of it can be integrated in the text (if the review covers more than the thesis field). Indicate on the first relevant page as a footnote or in the section title: “parts of it were taken from …” and modify). (Discuss with your main supervisor!!!!)

This review also needs to be listed in the publication list at the end as well in cumulative case (see 4.16).

## Research questions (hypothesis) / Aim of thesis

* Should introduce research questions (RQ1-x) / tasks /aim 🡪 then answer questions in the discussion, confirm or refute.
* These questions can also be hypothesis driven (research hypotheses).

Give short explanations (1-2 sentences) about the meaning of the questions / hypothesis and about the plan and actions how they should be answered / confirmed. Good example is Haringa: <https://repository.tudelft.nl/islandora/object/uuid%3A441ec955-cd8d-4ae0-b2f0-98fbf91a570a?collection=research>.

* Questions need to be answered, hypothesis confirmed or refuted in the discussion.
* Discussion can be structured accordingly 🡪 subchapters, for example.
* It is important to think in advance, whether you decide for research questions or research hypotheses. The way or your decision has consequences for the discussion part (answering a question, evaluation of a hypothesis (accepting/rejecting).

## Materials & Methods

* Should be structured like in an article, not like an SOP.
* In cumulative thesis: can be very short, do not repeat all the details of the publications (you can refer to them for details).
* 🡪 Might be different from case to case, no absolute format for all.

## Results

* Cumulative thesis: Summarize your results of the papers. Refer to the papers either in the text or the headlines of the sub-chapters. Sub-chapters canbe ordered according to the paper order for example.
* Monography: like in master thesis (end with best/most important result).

## Discussion

* Has a length of 10-20 pages.
* Discuss own results in relation to literature / state of the art, which you described in the scientific background (see -).

What is your contribution to science (and society)?

How do your results improve the state of the art?

* Discussion starts from most important research questions and results (start with your general task/niche). This is different to the results section. Then go into details.
* Also needed for cumulative thesis, where each paper has discussion. But then wrap the discussion up / summarize for all, do not repeat it from the papers.
* Holistic approach: See the overall thesis, do not necessarily separate the discussion into the different papers (sometimes however it may make sense if the papers have different contents) 🡪 see the whole story.

## Conclusions, Outlook

* Can be both in one section or separated.
* Avoid references / citations in these chapters.
* *Conclusions:*

What you really conclude from your own work?

What do you expect where the field of science is developing?

What need other scientists to consider as a result of your own contribution?

* *Outlook*:

Really look to the future.

Where it goes further after your work?

What do you propose? What is your vision?

* If you fail to answer any of your research questions, you might put it here as an outlook. But you need to discuss it!

## References:

* Name and year should be mentioned in references in the text, e.g. (Junne et al. 2017, Neubauer & Junne 2016)
* Do not use numbers in the text.
* Reference list shall be alphabetically ordered.
* Each reference should be complete 🡪 include title, authors, journal, etc.
* For cumulative thesis: One reference list after the thesis text, (having all references which are mentioned in introduction, scientific review, results, and discussion) at the end of the thesis but before the papers. 🡪 Also maintain the reference list after each paper.
* For monography: list all references in the end.

## Ten theses

* Written at the end of the thesis part (before the papers in cumulative case).
* 10 most important theses should sum up the results of the work.
* Try to be as specific as possible!!!!
* Definition of a thesis (These):
	+ Theses are statements/claims resulting from the results of the work, for which proof was obtained within the framework of the results produced in the work.
	+ [https://wortwuchs.net/these/](https://wortwuchs.net/these/%20)  (German)
	+ <https://writingcenter.unc.edu/tips-and-tools/thesis-statements/>
	+ <https://penandthepad.com/how-8229968-write-thesis-statement-science-report.html>
	+ <http://www.cws.illinois.edu/workshop/writers/tips/thesis/>
* You can also include 1-2 broader societal hypotheses based on the work. Nice examples can be found in Dutch theses.
* The 10 theses are a good basis for a condensed and specific abstract.

## Publications (cumulative case)

* Attach papers and manuscripts at this position: formatted as in journal, with permission of the journal 🡪 complications occur with the TU library if the papers are formatted differently in the thesis. (*See also 8.*)
* An empty page containing the numbers of the papers should be placed between the papers for separation.
* See also 3. Special requirements for cumulative thesis

## Appendix

* Include all figures, tables, other material that is of less importance, but might be useful for the reader / provide more information for better understanding of the thesis.

## CV

* Short one, 1 page max., helps reviewers to introduce you or get to know key facts.
* A CV is NOT wanted for publication in the library. Please delete your CV before publishing.

## General:

* No chemical list, instrument lists needed (if wanted this can be in the Appendix).
* No list for figures or tables is needed (nobody really uses these lists).
* Figures should not be copied from other papers, books (although it would not be illegal in Germany with written permission of the journal according to the copy right law).

Better make figures yourself or modify them. Even hand-painting is possible.

If you really do need to copy or change an original figure from another publication, you need a written permission of the author.

* For equations: Use the formula editor of the writing program you are using.

# Conclusion / Outlook regarding template:

* This is the official template for BVT (there is no official template from TU). However, always check with Prof Neubauer before finalizing your thesis.
* If you find any challenges with the library when submitting your thesis (formatting matters), please give feedback to Prof. Neubauer or your supervisor. Then we can consider this in the template.

# Submission process to reviewers and faculty

* Reviewers should be maximum three people: the supervisor (professor), one reviewer from the faculty (III), and one external / independent professor who has not been co-author or an external supervisor. In case of an external supervisor, another person (preferably internal) that is independent has to be chosen.
* If external persons have to travel a lot, try to connect their visit to other activities / meetings at the chair.
* Reviewer need to have a higher degree than PhD (Prof., Habil.)🡪 difficult to have someone from industry with just a “Dr.-Degree”). Exceptions are possible if you can argument to faculty that he/she has comparable competence to a professor (see also Doctoral Regulations).
* Submission of thesis to faculty, reviewers, and chair should be regarded as final one (incl. title, layout, binding) although officially it is the preliminary version. 🡪 Only minor changes (mostly orthographical) should be done in order to reduce work after defense for the final version to the library 🡪 talk to your supervisors before!

(The copy for the faculty can be bound with a simple glue binding / “Leimbindung”, no ring binding).

* After the review by the reviewers, a correction sheet can be added to the thesis.
* After the defense (“Wissenschaftliche Aussprache”) you have 1 year time to submit the thesis with the changes to the library. Normally, this is done in electronic form with 1 additional printed copy for the library, which can be bound with a simple glue binding (no ring binding).
* The doctor title is valid only after the official certificate from university (via the faculty) is obtained.
* Normally, at our faculty, the PhD student does not receive the reviewer reports. But it can be asked for after the “Wissenschaftliche Aussprache”. Prof. Neubauer also supports the provision of the student with his reviewer report so that you can react to it in the defense.
* Nevertheless – according to the Doctoral Regulations (“Promotionsordnung”) 2014, § 7 – “Evaluation of the Dissertation”, the reviewers should give feedback to the candidate about changes BEFORE the reports are written:

“Before completing their assessments, the evaluators will inform the doctoral candidate about any objections in order to give him/her the opportunity to amend or slightly modify the dissertation.” (GER: „Die Gutachterinnen und Gutachter sollen der Doktorandin oder dem Doktoranden ihre etwaigen Einwände vor der Erstellung ihrer Gutachten zur Kenntnis bringen, um ihr oder ihm Gelegenheit zu Ergänzungen oder kleineren Änderungen der Dissertation zu geben“).

* Possibility of digital pre-review (this only is done in exceptions and would be absolutely necessary to agree with your main supervisor at university):
	+ digital version (PDF) can be sent directly to reviewers instead of going the long procedure via university;
	+ changes by the student can be made even before official printing; and
	+ reviewers can write report earlier

🡪 The time of 3 months might not be needed and defense and final submission to faculty can be done earlier (advantage for short-term grants).

# Defense / “Wissenschaftliche Aussprache”

* Defense date should be agreed with reviewers after the official submission of the thesis to them. They have officially 3 months to review until the defense but might be faster.
* If agreed with your main supervisor, you may call them also when you are close to submission; especially in case of grants where you need to defend within a limited time frame.
* Note also: there must be 3 weeks (14-16 days) between submission of the last review report to the faculty and the defense date!!
* Form of the defense:
	+ Presentation lasts exactly 30 min, discussion at least 1h.
	+ The presentation part is recommended to be performed with power point slides.
	+ For the discussion part, a handout of the complete presentation should be provided for all reviewers and the chairman.
	+ Prepare the power point slides and handout in digital form at least 2-3 weeks before the defense and agree it with your direct advisor and university supervisor (at BVT: Prof. Neubauer) for check-up.

1. **Further information about submission to faculty:**
* Please have a look on the faculty page and especially on the “Doctoral Regulations” (Promotionsordnung), where you also find important information: <http://www.tu-berlin.de/fak_3/menue/forschung/promotionhabilitation/>.
* Download and check the checklist from faculty III: Checkliste\_Antrag\_neu\_20170228.
* CV in German is sufficient for faculty.
* An extra declaration of originality for the faculty is not necessary, since the required parts are included in the “application to commence the doctoral procedure” (“Antrag auf Zulassung zum Promotionsverfahren”).
* There is a template for the cover page with the title and information about the reviewers from the library: <https://www.ub.tu-berlin.de/publizieren/veroeffentlichen/checklisten-zur-veroeffentlichung-von-dissertationen/dissertationen-online/>; “UV\_diss\_mustertitelblatt\_dt”;

Women can choose if they write “Doktorin” or “Doktor”.

1. **Submission of a cumulative thesis to the library**

*Experience report about submitting thesis to the TU library, 08.09.17, Anja Lemoine*

If you prepare a cumulative dissertation you have to ask the Journal for permission. You can do that on the Journal web-site. Search for your article and choose: “get permission for your article”. Download the Permission-Letter. If you want to include your article without the layout of the journal you have to state if the version, you included, is the “Preprint” or “Postprint” version. On the page were you write that your dissertation has been partly published, you should include the chapters were you included material of the paper. For the correct citation at this page, it is very important that you also state the DOI.

# Mail from Klaus regarding the printing discount

Von: Pellicer Alborch, Klaus

Gesendet: Donnerstag, 22. November 2018 15:47

Betreff: WG: Angebot fürs Fachgebiet Bioverfahrenstechnik der TU Berlin

​​​Hallo alle zusammen,

Wie ihr unten sehen könnt: der "Kopierladen" in Prenzlauer Berg bietet uns ein Rabatt von 10 % für alle gedruckte Promotionsarbeiten ab 2019.

Es Kostet ungefähr 30-45 €/Arbeit (abhängig von der Anzahl von Seiten (typischerweise​ 100-200) und Schwarz/Weiß vs. farbig) und dann wären es 27-40,5 ​​€/Arbeit.

Grüße, Klaus Pellicer Alborch

-------------------------------------------------------------------------------------------

Von: Kopierladen <info@kopierladen-berlin.de>

Gesendet: Donnerstag, 22. November 2018 16:26

An: Pellicer Alborch, Klaus

Cc: Mühlenstr.; Berliner; Frankfurter; Danziger

Betreff: Re: Angebot fürs Fachgebiet Bioverfahrenstechnik der TU Berlin

Sehr geehrter Herr Pellicer Alborch,

vielen Dank für Ihre Anfrage. Gern räumen wir Ihnen einen Rabatt von 10% auf Ihre Promotionsarbeiten im Jahr 2019 ein.

Bitte geben Sie dazu, bei der Beauftragung in unseren Läden, den Namen der Universität und den Fachbereich an.

Freundliche Grüße, Daniel Gersdorf

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Kontaktinformationen** | **Filiale 1** | **Filiale 2** | **Filiale 3** | **Filiale 4** |
| Kopierladen: info@kopierladen-berlin.de; Tel.: 030 92 09 09 50Fax: 030 92 09 09 52 18 | Berlin Weißensee (Zentrale) | Berlin Friedrichshain | Berlin Prenzlauer Berg | Berlin Pankow |
| Berliner Allee 16 | Berliner Allee 16 | Frankfurter Allee 72 | Danziger Str. 96 | Mühlenstr. 44 |
| 13088 Berlin | 13088 Berlin | 10247 Berlin | 10405 Berlin | 13187 Berlin |