

# **General Information for PhD Candidates at the Behavioral Section of DGESS**

PhD candidate have the responsibility to stay updated to the latest regulations for their PhD and they must take care themselves of the important deadlines and deliverables.

The following lines provide a useful orientation.

PhD information portal: [http://www.rektorat.ethz.ch/doctorate/index\\_EN](http://www.rektorat.ethz.ch/doctorate/index_EN)

Research plan: [http://www.rektorat.ethz.ch/doctorate/admin/research\\_plan/index\\_EN](http://www.rektorat.ethz.ch/doctorate/admin/research_plan/index_EN)

Regulations: [http://www.rektorat.ethz.ch/doctorate/application/index\\_EN](http://www.rektorat.ethz.ch/doctorate/application/index_EN)

## **Contact Persons:**

ETH Zurich Rectorate	
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<b><u>Nina Wade (main contact at GESS)</u></b> <a href="#">IFW E 33.1</a> Haldeneggsteig 4, 8092 Zürich <a href="mailto:nina.wade@gess.ethz.ch">nina.wade@gess.ethz.ch</a> Phone: +41 44 632 23 08	<b>Dr. Stefan Karlen (urgent cases only)</b> <a href="#">IFW E 33.2</a> Haldeneggsteig 4 / 8092 Zürich <a href="mailto:karlen@gess.ethz.ch">karlen@gess.ethz.ch</a> Phone: +41 44 632 08 70

## **Important Deadlines:**

- PhD students are strongly recommended to present their research idea and concept in a seminar of the Behavioral Section about 6-8 months after enrolling as PhD students, and to explicitly invite the Behavioral Professors to their seminar presentation for feedback.

The Research Plan must have been approved 12 months after enrolling as a PhD student. Therefore, PhD candidates need to submit the Research Plan:

- 12 weeks in advance to the supervising postdoc (i.e. 9 months after enrolling as a PhD student)
- 10 weeks in advance to the supervising professor
- 8 weeks in advance to the Behavioral Section (this is actually done by the chair)
- Feedback will be given about 3 weeks later
- A revision of the research plan would have to be submitted 2 weeks before the deadline
- The final decision of the Behavioral Section on the Research Plan is due before the deadline

In case any of these deadlines is likely to be missed, a request for a deadline extension is suggested, but it needs to be very well justified.

**A deadline extension can be requested in exceptional cases, but this requires the approval of the doctoral committee of the department!**

### PhD Thesis

Make sure to stay in contact with the supervisor and co-supervisor to allow them to give feedback on your research approach, methodology, results, and presentation.

PhD candidates need to submit the PhD Thesis **at least**:

- 12 weeks in advance to the supervising postdoc, but a continuous feedback is strongly suggested
- 8 weeks in advance to the supervising professors (supervisor and co-supervisor)
- 2 weeks in advance to the Doctoral committee (this is actually done by the chair)

The evaluation of the PhD thesis by the supervisor and co-supervisor will typically take 3 months.

### Defense of PhD Thesis

Please make sure to coordinate early on a date with GESS representatives (please talk to Viola Gloor), the supervisor and co-supervising professors. Please consider longer absence periods of the professors (sabbaticals, teaching obligations and travel activities to conferences). The candidate is responsible for organizing a room for the thesis defense.

## **Guidelines for writing a PhD Research Plan**

(not to be understood as strict regulation, but rather as a recommendation)

ETH Zurich offers a Dr. ETH without the specification of a particular field. Therefore, while PhDs in the Behavioral Section of the D-GESS of ETH Zurich traditionally have a focus on behavioral studies, inter-, cross-, multi-, or transdisciplinary projects linking between different disciplines or linking with the natural and engineering sciences are explicitly encouraged. In all cases, however, a PhD thesis must satisfy high, international standards, as assessed by experts in the selected research field and the chosen methodological approach ('peers').

In particular, a PhD in the Behavioral Section of D-GESS can have one of the following directions (the following is non-exclusive):

- Empirical research (see detailed instructions in the Appendix).
- Theoretical research (e.g. the study of a behavioral theory or set of axioms).
- Methodological research (e.g. the design of a measurement concept or instrument).
- Exploratory, open-ended research (e.g. data-driven modeling).
- A classification of behavioral phenomena and the abstraction of ideal-typical behaviors ('stylized facts').
- Research on artificial cognitive, social or economic systems, such as agent-based societies or markets.
- Research on techno-social systems such as users interacting with the Internet.
- Research aiming at the design of socio-inspired technologies (where socio-inspired does not necessarily mean a 1:1 transfer of social mechanisms).
- Research on systemic risks and data science, if social aspects are significant.

- Narratives (giving a detailed analysis of a behavioral phenomenon).
- Ethical, philosophical, or historical studies.

In all these cases it is important that the *systematic research approach* is worked out clearly and that *criteria are formulated, which allow one to judge the level of success of the PhD thesis*. Note that the main focus of the Behaviorals Section is on quantitative approaches.

The Research Plan should be a **concise** description of the research strategy of the PhD candidate. It should be well focused on a sufficiently challenging, but **concrete and tractable research question**, which the candidate is usually expected to be able to give a **positive answer** to by the end of his PhD research (usually after 3 years).

The PhD Plan should be **coherent**, and its parts should be **logical** to answer question(s) of the PhD research. Each part should be **well motivated**. The Research Plan should not be overloaded by unnecessary components, in order to avoid distraction from the main lines of research.

**Correctness and clarity** of the exposition are essential.

## Structure of the Research Plan

### 1. Summary of the research plan (one page)

This should give an **overview** of the most important features of your research plan and place your project in a broader scientific context. It should be written in **clear, non-technical language** and broadly comprehensible to a wide audience.

### 2. Research plan (recommended to be no more than 10 pages)

This would be the main body of the proposal. The page count would include all figures, tables, formulae and references. The font size should be at least 10pt with a line spacing of 1.5.

#### 2.1. Literature review and summary of current state of research in your academic area

Set out the scientific **background** and theoretical basis of your research project; summarize the **state of the art** and cite the **most important publications** in your area of research. Make sure to distinguish the different research traditions/schools well. Say clearly, which **approach** you are following and which not, and why. Motivate and **justify** your approach, particularly if you are choosing an approach that deviates from traditional approaches; explain the need to perform research on the topic you propose and what **open questions** your work is planning to resolve, and how. Explain the **overall relevance** of this research area.

#### 2.2. Current state of your own research

Give a brief explanation of what research you have performed to date at ETH Zurich and explain, how it is related to your proposed research.

#### 2.3 Detailed research framework

Explain the goals, theoretical approach, methods, and data central to your research. Typically this consists of describing 2-4 interrelated projects/tasks (each of these projects could be organized like a publishable paper (this organization scheme is consistent with a cumulative dissertation approach). At least one of these projects should be explained in detail and with specifics, whereas the other projects may be nascent and thus less well concrete; a broader overview of these projects is acceptable. Nonetheless, these projects should still have clear research questions and well defined research designs.

Tell which studies or experiments you plan to carry out for the dissertation. Clearly state the research questions and research designs you plan to use. Please note that part of this research plan can change when new data are considered or new results are obtained; this is a natural part of practicing science. A research plan is not binding, but a well-written proposal serves to demonstrate the ability of a student to clearly formulate intelligible and interesting research questions, think rigorously, organize evidence, and create a coherent and viable research strategy.

Information concerning the **methods** necessary to attain the goals:

- What are the established research methods available to you and how do you plan to use them?
- If you will be developing new research methods, how will they be developed and validated?

**Data** and data collection:

- Which data are available to you and from where?
- Which data need to be collected?
- In general, how will the data be analyzed and interpreted?
- Are there any ethical issues, and how are you taking care of them? (checking with the ethics committee may be necessary)

*Notes (see Appendix for further details):*

1. Make sure to start off the description of each research task with a specification and justification of the **scientific puzzle** (new and exciting scientific question), and why it is relevant to study.
2. If possible, formulate **hypotheses** regarding your expected findings, and derive them from the established knowledge in the scientific literature.
3. End the description by detailing **criteria, which allow the reviewers to judge the level of success** of the research to be performed.

## 2.4 Schedule and milestones

Briefly give a timeline of your dissertation studies including a **Gantt chart**.

## 2.5. Importance and impact (if applicable)

Please describe briefly the importance of your research to the scientific community and the social, economic, political, technological or other impact you expect from the project, and its value for research and training / teaching in your field / discipline. Please indicate how you will publish / communicate your results. Specifically, what established academic communities (e.g. which journals and conferences) do you see your work contributing to?

## 2.6 Broader impact (optional)

If it applies, please describe the impact of your research beyond your field / discipline and to the non-scientific community. In particular, describe potential impact and transfer measures to economy, industry, politics or society.

## **2.7 Further information**

- Short list of other responsibilities of the PhD student
- Particular external determining factors that reviewers should be aware of (if any)
- CV of the PhD student summarizing the previous career path (as separate document)

## **Appendix: Further Hints How to Write a Research Plan**

### ***What is the problem? What kind of behavior is intended to be explained?***

Despite their different disciplinary backgrounds, members of the Behavioral Section have a common focus on human or human-like behavior. In general, they want to find out how human beings or computer agents behave in situations where they have more than one option, and why they behave the way they do. Several members of the Behavioral Section have a strong focus on social situations, which means they study how individuals or agents interact. What kind of external cues trigger certain behavior in particular contexts? How does an individual's or agent's former experience and learning history influence her choice of behavior? Having such kinds of questions in mind, the PhD candidate has to explain why the behavior to be investigated in his/her thesis is worth being addressed from a scientific perspective.

The proposal has to be revised and resubmitted if it does not become entirely clear already on the first two pages, what kind of behavior will be dealt with, and what as yet unanswered questions go along with that behavior.

### ***What research tradition will be drawn on, and what is the state of the art?***

How has former research addressed the problem? Behavioral Research is based on **data** from various sources. Datasets can come from the direct observation of human behavior, from interviews and questionnaires, from experiments, measurements, or computer simulations. Datasets can also be statistics from administrations, or electronic traces of human behavior (e.g. citations, communication pattern in the internet, or information about online purchases). It should become clear already on the first pages, what kind of dataset is typically drawn on in the research area(s) relevant to the Research Plan.

It is not necessary to give an extensive overview of the research in a Research Plan. However, to make the Research Plan understandable for scientists who are not from the area, some research tasks should be described in greater detail, and the candidate should make clear how s/he will go on from this work.

A revision of the Research Plan is required, if the open **questions** in the field are not explicitly mentioned, and if it does not become clear, what kind of methodological approach will be chosen.

### ***Research questions and hypotheses: What will be the concrete contribution of the thesis?***

This is the heart of the proposal. The candidate has to formulate as precisely as possible how his/her findings might change the explanation of a particular aspect of behavior. At the same time, the candidate should be very critical of himself. The difference between everyday reasoning and scientific reasoning is that scientists have to **seek for counterevidence**. PhD candidates have to make clear what constitutes success or failure of the work they plan. In case of an open research question, potential answers have to be anticipated. In other words, it has to be stated in advance, what kinds of findings are in line with what kinds of questions. **Hypotheses** should be formulated under the perspective of possible falsification.

### ***What kind of evidence will be chosen to address the research question?***

The design of the study as well as the dataset to be used or created, have to be described in detail. Usually, the following questions have to be addressed: What kind of measures will be used for data collection? What is the sample to be drawn on? Are there ethical or organizational concerns to be considered? What kind of statistical analyses are planned?

For this part of the Research Plan, it is good to collect advice from others. Experienced scientists, also from different research fields, can sometimes give really good suggestions for data generation, collection and analysis.

### ***Time schedule and format of the thesis***

A core part of the Research Plan is a detailed **time schedule**, namely for two reasons: First, the professors of the Behavioral Section have to judge whether the contribution to science is substantial enough for getting a PhD title. Second, the professors of the Behavioral Section have to judge, whether the plan is realistic or whether the candidate has taken on too much. For both judgments we have to know how the candidate will spend his/her time in the next 2-3 years. If a cumulative dissertation is taken into consideration, (tentative) working titles of the planned articles and possible journals might be indicated (but these specifications may be adapted over time as appropriate).

## **Evaluation by the members of the Behavioral Section (reviewers)**

The purpose of the evaluation is to provide **concrete and constructive feedback** to

enable the PhD students and their supervisors to better assess and **improve** their project. Therefore, with every point the reviewers raise, reviewers should clearly express whether it is thought to be

- a) a comment, advice, recommendation or question (this is assumed to be the default case, if nothing else is stated)
- b) a request to revise the Research Plan (which should be concretely substantiated)
- c) serious criticism that questions the qualification of the PhD student (which should be justified by giving a detailed explanation what scientific principles or standards are violated)

Feedback should respect the principle of *independent judgment*.

It should be avoided that PhD students are requested to implement changes that would not be compatible with the expectations of the PhD supervisor or the expectations of the specialized scientific community from which the peer reviewers of the PhD thesis would be chosen. Such requests would establish additional obstacles for inter-, multi-, cross- or transdisciplinary research.

Therefore, *reviewers should usually not impose changes in the research direction or methodology*, if chosen by the PhD student in agreement with the supervisor. They should also not require additional work that might be difficult to achieve within the typical duration of a PhD project (e.g. requesting to analyze datasets that might not be accessible to the PhD student).

On request of the PhD supervisor and a second member of the Behavioral Section, external reviewers may be consulted on the quality of the Research Plan.

#### Response to reviewer feedback:

The supervisor forwards the comments of the reviewers to the PhD student.

The PhD student is asked to consider points of kind a) when pursuing his/her research, but a revision or response of the PhD student or supervisor is not required.

Points of kind b) require a revision of the Research Plan. Feedback of kind b) should usually not require an extension of the preparation time of a Research Plan beyond one year.

The reviewers may also request clarification, make comments to approaches they consider to be wrong, or raise doubts about the feasibility of the project. Such questions will be answered either by the PhD student or supervisor, as appropriate, and depending on the result of this discussion, a revision of the Research Plan may be required by the respective reviewer or not.

Feedback of kind c) must be very well justified and, considering the constitutional freedom of research, respect the diversity of scientific research approaches. New research approaches which challenge established ways of thinking should be welcomed. The PhD supervisor responds to items of kind c) and makes a substantiated suggestion how to proceed further (revise or reject the proposal). The Behaviorals accept or reject this suggestion. In case of rejection, the case will be discussed by the PhD committee of the DGESS in the presence of the supervisor and the critical colleagues. If no agreement is reached in the PhD committee, an external peer review is arranged. For this, 2-3 reviewers

are agreed between the supervisor and the PhD committee. The last resort is to bring the case to the attention of the rector of ETH Zurich.

### **Time schedule**

The research plan should be submitted 8 weeks prior to the deadline. The reviewers have three weeks to comment on the proposal based on the principles outlined in the PhD Guidelines. If no comments are made, this is valued as implicit acceptance. If a revision of the PhD Research Plan is requested, the PhD student resubmits the revised Research Plan or answers to open questions 2 weeks before the deadline ends. Changes of the Research Plan should be specified (or marked) and explained in a resubmission letter. The members of the Behavioral Section decide within one week by majority vote, whether the revised Research Plan is acceptable or whether the deadline has to be extended because the PhD student still has to work on the plan.