



UNIVERSITY OF TWENTE.

## Final Thesis Project Guide PSTS 2013-2014

**Final Thesis Project Guide 2013-2014**  
Master of Science Philosophy of Science,  
Technology and Society

University of Twente  
Faculty of Behavioural Sciences  
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## Introduction

This guide intends to identify the steps that students need to complete before graduating. Both formal requirements and procedures are mentioned alongside practical tips. Beyond that, this document aims to guide you through each phase of the final project process and answer the most frequently asked questions. If you find errors in this guide, or you think that other specific information should be included, we would like to receive your comments.

In case of conflict, no rights can be derived from this guide. For such matters, you need to turn to the *Student Charter* and in particular the PSTS Appendixes (see <http://www.utwente.nl/psts/education/>).

We would like to wish you success while completing your master's programme. If you have any further questions, please do not hesitate to contact coordinator of the profile.

On behalf of the PSTS staff, we wish you good luck,

Philip Brey, Kornelia Konrad, Peter-Paul Verbeek.

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Link to the newest version of the Final Thesis Project Guide: <http://www.utwente.nl/psts/education/>

# 1 Aim of the final thesis project

The last half year of the study is devoted to writing a thesis. The main idea is that you are able to apply – and reflect upon – many of the philosophical, historical and sociological concepts that you have learned during the education programme. Here we quote the regulations of the programme stating objectives and final qualifications. This section suggests what skills and learning objectives are central to completion of your thesis in the master.

## 1.1 Objectives of the MSc programme PSTS

The aim of the programme is to equip students with knowledge and skills in the area of general philosophy and the philosophy of technology, with a possible expansion into the multidisciplinary subject area of science and technology studies. This is achieved in such a way that graduates (making use of knowledge gained through a previous Bachelor's programme in a technical field or one of the physical sciences) are able to conduct philosophical or philosophically informed multidisciplinary analyses pertaining to the areas of technology, technical sciences and applied physical sciences, technological developments, and the relationship between technology and society. Graduates possess sufficient knowledge and skills to participate in professional practice, for example as scientific researchers, R&D researchers, consultants, policymakers, educators, or designers. They are able to independently carry out philosophical and/or multidisciplinary STS research and should be considered for a PhD. position.

## 1.2 Final qualifications of the MSc programme PSTS

### Preamble

The PSTS programme has as its domain the philosophy of technology, which is a field that is concerned with the philosophical study of technology and its implications for and interactions with society. In the PSTS programme, the philosophy of technology is understood broadly as a field that includes, next to philosophical approaches, empirical and multidisciplinary approaches from the field of science, technology and innovation studies (STS).

### Knowledge

- K1. Extensive knowledge of the philosophy of technology, including its philosophical and STS approaches, and the ability to relate these approaches to each other.
- K2. Good knowledge of the various philosophical subfields, including ethics of technology, social and political philosophy of technology, philosophical anthropology of technology, epistemology and metaphysics of technology, and philosophy and history of (engineering) science and technology.
- K3. Good knowledge of approaches and themes in STS.
- K4. Good knowledge of empirical research methods in STS and philosophical research methods.
- K5. A basic understanding of the relation between the philosophy of technology, including its various subfields, methods and history, to general philosophy, including its various subfields, methods and history.
- K6. Specialist knowledge of a sub-domain or specialized topic within the philosophy of technology (broadly defined).

### Skills

- S1. Writing and verbal communication skills.
- S2. Skills in reasoning and arguing and in the analysis of arguments.
- S3. Skills in locating, reading and analyzing scientific texts from various disciplines in philosophy and STS, as well as professional and popular texts, that reflect on technology, engineering sciences, technological developments, and the relationship between technology and society.
- S4. Skills in the identification and analysis of problems related to the role of technology and science in society, and the ability to formulate a position with regard to these problems from a philosophical and/or STS perspective.
- S5. The ability to perform original scientific research in the field of philosophy of technology, using philosophical and/or STS methods. This includes the ability to arrive at a well-considered problem formulation, the selection and development of appropriate theories and (empirical) methodologies, and the proper execution of a research plan.

- S6. Skills in the comparison of differing scientific approaches or paradigms in a sub-domain or specialized topic, the application of these approaches, and the ability to critically analyze them.
- S7. The ability to generate philosophical and/or STS research results that are relevant for scientific, technological, and/or social practices.
- S8. The capacity to communicate research results and solutions to colleagues, as well as professionals from other subject areas, and the ability to generate learning processes from that interaction.
- S9. Reflective capacity pertaining to one's own work, selecting or altering course, and the ability to translate learning trajectories into the development of more general knowledge and methods.
- S10. Capable to endeavor a career inside or outside of academia wherein philosophical and STS knowledge and skills are required.

## 2 Fundamentals of the final thesis

### *Test or exercise?*

The final thesis project is your final learning experience and also the material for your final assessment and grading. In the first place, it is a learning experience in which you develop yourself to the level of a young academic researcher in the field of PSTS. This happens in the academic tradition of apprenticeship. You will work as a young professional, independently with courage, exploiting all you have learned so far, but not completely self-reliant or solo. You must rely on your supervisor, who will guide you, supervise you, and who will finally grade your thesis. In this guide you will find more information on the details of the final thesis project and the process of completing this project.

### *Education or research?*

The educational value of the thesis project is considered more important than the research itself; however, there is no contradiction here and no choice to be made. The point is that you demonstrate having attained the status of a young professional academic while doing your thesis project. Your work is graded on academic values such as comprehension of relevant theories, sound problem setting, disciplined thinking and analysing, sound conclusions, good writing, initiative, perseverance, communication, presentation, learn ability. See the aspects in the assessment form in appendix D.

### *Timeframe*

The final thesis should be completed in the period that the student and the supervisor have agreed to. Both the student and the supervisor are responsible for ensuring that the thesis project progresses as planned. However, they should remain aware of how this can influence the quality of the research. Before and during the writing of your thesis, it is essential to meet the deadlines within your schedule. The thesis subject should be constructed so that the report can be written within 20 weeks.

### *Internal or external?*

Usually students complete their research within the department, but in some cases it is possible to do this externally (e.g. at a research facility or company). In such cases, you will need to discuss the possibilities with the coordinator of the profile of your preference.. One condition is that your external host is qualified for academic supervision and accepts co-supervision by a staff member from STePS or Philosophy. Especially when you plan to go abroad, it would be wise to start the preparation early, at least six month in advance.

### *Internship possibilities*

A brief internship may be included in any profile, not in the PhD track Ethics and Technology. The internship's objective is to facilitate an orientation on the professional field. The internship takes place in the third quarter of the second year. Preferably the internship is related to the envisaged Master's Thesis project. When the internship is completely integrated in the Master's Thesis project it is considered to be an external graduation project. For a description of the internship, please check the PSTS Programme Guide.

## 2.1 Milestones along the road to graduation

The process of final project completion is outlined in the following table, where the different phases and some formal procedures are identified. Your progression is marked by three milestone forms which need to be handed in at the Educational Service Centre of PSTS, located in the Cubicus C101. You find these forms in the appendixes A, B and C, and on the website [www.utwente.nl/psts](http://www.utwente.nl/psts). In this chapter it will be discussed what you should really be doing in every separate phase. In addition some tips and tricks will be given for the different phases.

Period	Activity	Result	Milestone
<b>First Year</b>	<ul style="list-style-type: none"> <li>Explore options in the 2<sup>nd</sup> year of PSTS</li> </ul>	<ul style="list-style-type: none"> <li>Choice of your profile with 2 electives</li> </ul>	<ul style="list-style-type: none"> <li>Hand in Milestone 1 (App A): <b>Subscription profile</b></li> <li>1 July</li> </ul>
<b>Semester 2.1</b> General structure: <ul style="list-style-type: none"> <li>3 profile courses</li> <li>2 electives</li> <li>Masterlab1</li> </ul>	<ul style="list-style-type: none"> <li>Explore thesis subjects</li> <li>Meet potential supervisors</li> <li>Literature research and analysis</li> <li>Writing thesis proposal</li> <li>Plan the complete process</li> </ul>	<ul style="list-style-type: none"> <li>Approved thesis proposal</li> <li>Supervisor</li> <li>Graduation Committee</li> </ul>	<ul style="list-style-type: none"> <li>Hand in Milestone 2 (App B): <b>Final Project Contract and Study Planning</b></li> <li>1 February</li> </ul>
<b>Semester 2.2</b> General structure: <ul style="list-style-type: none"> <li>Masterlab2</li> <li>Regular meetings supervisor</li> <li>Green light meeting</li> <li>Graduation</li> </ul>	<ul style="list-style-type: none"> <li>Execution of the thesis project</li> <li>Literature research and analysis and/or empirical work and analysis.</li> <li>Thesis writing and rewriting</li> </ul>	Graduation Request <ul style="list-style-type: none"> <li>Approved thesis</li> <li>Oral examination</li> </ul> Public defence of final thesis	<ul style="list-style-type: none"> <li>Hand in Milestone 3 (App C): <b>Graduation Request</b></li> <li>At least 3 weeks before envisaged graduation</li> </ul>

## 2.2 Before the final project

### Choosing a profile

Of course, when you begin the final project, you have already completed all your courses in the first year programme. But when you are reading this manual and you have not already chosen a profile, it is important to realize that the topic of your final project should fit the profile you choose. The curriculum in the profile prepares you to write your final thesis. The Masterlab1 is designed to arrive at a proper thesis proposal within the first semester.

### Study abroad

Every year, several students have plans to study at a university in another country. Depending on the profile you choose, you might be able to study in Stockholm, Paris, Atlanta or one of the other associated universities. You could study a part of the curriculum at one of these universities, but you could also complete your final project there. However, if you go abroad, there is a lot of planning involved for yourself and the department. Besides the personal arrangements such as visa, housing and finances, it is also important that there is someone available that is willing and capable to supervise you at the university of your choice. If you would like to go abroad, you should talk to the appropriate profile coordinator in the fourth quarter of the first year (so before the summer holidays!). Note that you need approval of the examination board to incorporate courses that are not standard in your programme. The examination board will appoint a lecturer to define your grading for PSTS.

After permission of the examination board is granted and the courses abroad are completed, ensure you supply the University of Twente with official transcripts or records or results notifications that state: the course code and title of your course(s), the study load in ECTS credits; grades or marks preferably according to ECTS and the signature of the local examiner or institution stamp, and finally a

copy of your graded work. Please give the material to the appointed lecturer to obtain an official result notification for registration at Educational Affairs

### **Attending Colloquia**

PSTS students have to attend colloquia at the departments STePS and Philosophy and graduate colloquia PSTS as part of their academic training and to become familiar with research practice that supports the PSTS programme. This is compulsory throughout the two year programme. You are to attend at least four colloquia in the first year and four in the second. Attendance is monitored and registered. Complete the attendance form at the colloquium. The fulfilling of this obligation is checked as part of the assessment of the Philolab and at Masterlab1. Make sure that a statement about your attendance is available at the assessment. Collect the statement at the EAO PSTS.

## **2.3 Preparing the final project**

Check early whether you have completed all of the courses so that you can start your final project. Sometimes students are allowed to start their final project before they have finished all courses. Depending on your planning and progression the profile coordinator and your final project supervisor may allow you to start your final project.

At the start of the second year most students only have a vague idea about the kind of research they would like to do. Possibly you are interested in the ethical problems of genetic engineering, or perhaps you are more interested in applying and reflecting upon scenarios to predict whether new technologies might be successful and how they might be used. The profile coordinator is well informed on the options within the profile and should be able to suggest some possible supervisors to talk to. Use the context of the courses in the profile and of Masterlab 1 to explore options, subjects and methods.

### **Choice of subject and supervisor**

The initiative is on your side. Arrange a meeting with the profile coordinator to discuss your plan and possible supervisors. Arrange several meetings with possible supervisors in the first semester of the academic year. In these conversations the lecturers can help you to specify your interests even more, if you have not already done so yourself. Perhaps a lecturer is already working on research that suits your interests or he/she might suggest other possibilities for a final project that you have not thought of yourself but would like nonetheless. It should be no problem to ask a lecturer about possible topics if you are still a bit in doubt about your thesis project. There is no prize for the most individual thought-out final project topic, and there are usually several projects running or waiting for attention where your help will be appreciated.

There are three ways to find a topic:

- All lecturers have many contacts in relevant organizations and networks in their field. Lecturers do their research within the framework of the research programme of their departments. A student can ask them to help find a (specific) assignment from these contacts and research activities;
- The student tries to link his/her final project as much as possible to his/her own professional setting (if applicable). This option requires to be discussed between student and profile coordinator and supervisor;
- The third option is that the student himself/herself contacts institutes to inquire about the possibilities of doing the final assignment there.

The meetings with the lecturers should also be used to discuss a realistic timeframe. For both the student and the lecturer it is important to know what they can expect from each other. If the student wants to go on holiday for a month or has a job for two days a week, this should be reflected in the time frame.

You will need to choose a supervisor, but sometimes the lecturer might not be able to supervise you. It might be that the supervisor feels that he/she does not have enough knowledge about that specific subject to guide you. Perhaps your time schedules are so different that it might be difficult to plan meetings or possibly the lecturer is already supervising several students and simply does not have the time to supervise you too. In the end, the supervisor can choose to refuse projects.

After one or more discussions with a few lecturers, you should be able to pick a final project topic and a suitable lecturer who will then become your supervisor. If any doubts remain, you can schedule a new meeting with a lecturer. You need to talk to lecturers about final project topics to get a clear idea,

but this does not mean that you cannot settle for a supervisor when your project is not yet clearly defined.

After you have chosen a supervisor, you will need to inform the other supervisors you approached about your decision. That is not only courteous but it also prevents them from wasting time. Subsequently you will need to establish a final project programme and time frame which will guide your research. This includes the literature study, the writing of a thesis proposal, the research and the actual writing of the thesis. The formalization of the final project process is done by filling in the appropriate form (*Milestone 2, appendix B*) and submitting it to the profile coordinator, at the end of the second quarter in the context of Masterlab1. The profile coordinator will make sure that the Educational Affairs Office receives it so that it can be archived in the student's file.

Together with your supervisor, you can discuss the choice for a second reader. The second reader is assigned before you start your final thesis project. Formally you need to mention both supervisor and second reader in your project contract, Milestone 2. The second reader is not as involved with your final project as the supervisor is. The supervisor is responsible for the 'daily supervision' and comments on every paragraph of the thesis. A second reader comments only on complete chapters. This means that the supervisor has already read and commented on the entire chapter and the student has already rewritten what was necessary, so there is already an approval of the supervisor for this chapter. Sometimes it might be useful to have a meeting with both supervisor and second reader.

### **Tips for choosing an assignment and supervisor**

1. Keep in touch with your potential supervisors.

*When you have talked with one or more supervisors about a possible assignment, it is important to keep in touch. When weeks or even months pass by without contact – possibly because you intend to start with your final project a bit later than you initially anticipated – it is difficult for a lecturer to know whether you still want to graduate under his or her supervision. A bit of contact in an early phase is therefore respectful towards the people you might work more intensively with later on.*

2. Choose an assignment that you will like working on for a longer period.

*Every day for half a year, you will have to work on your final project. To maintain your own motivation it will help if you have chosen a subject that really interests you.*

3. Choose a supervisor that you can get along with.

*First and foremost it is important that your supervisor can and wants to supervise your graduation. The topic of your choice should therefore match his/her expertise. But beyond that, you will have to work pretty intensively and almost exclusively with your supervisor. It would be good if your supervisor guides you in a way that fits your style of working. Since styles of supervision may differ, ask the lecturers about their personal styles of supervision.*

4. Choose a supervisor who has time for you and relates to your subject.

*It is sensible to discuss the supervisor's availability and the preferred frequency of contact. A supervisor should be able to spend 50 hours (see chapter 4) on your final project, it is reasonable to expect that he/she is able to do so in practise. Freedom of choice in subject is also important, but realize that it might be difficult to find a suitable supervisor for your interests. In such cases discuss your options with the profile coordinator.*

## **2.4 Literature study**

A literature study starts with searching for and selecting appropriate literature. Your supervisor is well informed about the literature in your field of research, e.g. medical ethics, but has not always read everything specific about your research topic, e.g. the use of stem cells for scientific research. Because you need to place your topic in – for example - a historical debate, it is often good to first read about the general field of research before you focus on the literature of your own topic. Your supervisor can help you by pointing out particular books or scientific articles. Naturally, you should also search for literature yourself. There are several places where you can do this:

- The library: the University Library has a collection of books with mostly standard works that can serve as an introduction into your field of research. You can use the website of the University Library (<http://www.utwente.nl/ub/>) to find these books. It is possible though that the University

Library does not hold the book that you require. In this case, you can search on Picarta to see if that book is available in another Dutch university library. The book can then be ordered using an IBL account and will be sent to Enschede. In consultation with your supervisor you can request this book via the faculty so that you can avoid some associated costs. You can also find many papers using the library's website to search for e-journals.

- The internet: an accessible source of literature, although it might be difficult to find suitable literature of an adequate level. Pages on Wikipedia may not be adequate references but they can serve as an entry to other sources. Google Scholar (<http://scholar.google.nl/>) is a useful programme to find scientific articles and books.
- The bookshop: sometimes it might be best to purchase a book that you plan to use intensively. The advantage is that you can add remarks and make notes in the book.
- Fellow students: when you are searching for literature about a specific topic, your fellow students of course can give you good tips. Sometimes they might have books themselves about that subject. Perhaps you can borrow some books.

Once you have found the first few useful books or articles, it often becomes easier to advance your search using the literature list and references. Together with your supervisor you can make a selection of the literature that you want to read. When selecting, pay close attention to the background of the writer, the context of the book (why it is written) and the references that the writer draws on.

It is always preferred to read a book in the language in which it was written. Translations may come with subtle (or less subtle) changes of meaning. If a book is not originally written in a language that you can read, it would be sensible to consult your supervisor about which translation you should read. In general, your supervisor is able to recommend a good translation. You can also use the internet to search for reviews of translations.

When you have made a selection of the literature, it would be wise to make a schedule. Setting deadlines can help you maintain some speed during your final project and prevents you from becoming 'stuck' in a book. Because reading 40 hours a week is almost impossible to achieve, it may be done while you still complete the last few master's courses. It goes without saying that your supervisor needs to agree if you want to spread your focus in this manner.

It is really important to use some form of system during your literature study to prevent reading everything that has some connection with your topic, without really processing that information. Ask yourself what you want to accomplish before you start studying a book and make notes! There are multiple ways to do this:

- You can keep a logbook with notes;
- You can underlining fragments in the text and add remarks on the sides of the pages, allowing you to quickly find to the important fragments;
- You can make excerpts of articles and books.

Every student has his/her own preferences. You need to discover what way is best for you. Finally, discuss with your supervisor how you will need to complete your literature study. This depends on the supervisor. It would be best to discuss this at an early stage so that you take this into account while making notes.

### **Tips for the literature study**

1. Do not just read, also write.

*When you only collect more and more literature and do not write down what this information has to do with your problem, chances are that you will find it difficult to attack the problem. It is often easier to structure your thoughts by writing. Furthermore, while writing, you can formulate new questions that help you to grasp the problem and think up new questions for further research. While you are working on your literature study you might want to start writing on your final project proposal.*

2. Talk to others.

*Especially in this phase, it is important to talk to others about your topic. Just like when you are writing, while you are talking you are structuring your thoughts. This helps you see what*

*presuppositions might have been wrong, and it may give you new ideas, etc. The PSTS master's seminars are of course also very helpful for this.*

3. Make excerpts and notes of the literature.

*You will read a lot of articles and books, and if you want to keep it clear, it is helpful to make excerpts and notes. In those texts you should also write down why you think that this specific article or book is useful for you. Make notes of the strong and weak points in a text, questions you have with this text and what parts you can or cannot use. Questions that you have with a text can often be used to start a discussion with your supervisor or address a problem with the text.*

## 2.5 Writing a thesis proposal

Once you have proceeded some way with your literature study you should have enough basic knowledge to formulate a final project proposal. Based on this proposal and your progress in the remainder of the curriculum, it will be decided whether you will be allowed to begin the final project. This means that you can start writing your thesis when your final project proposal is approved by the supervisor.

The writing of your final project proposal will be connected to Masterlab1, where you will have the opportunity to present and discuss ideas for your thesis topic and concepts of your proposal. Before the final version of the proposal is finished, one or few concepts may precede it. The concept is discussed with the supervisor and improved by the student. It is sensible to start early when writing your first version of the proposal. This gives you enough time to improve the proposal to a good level and forces you to formulate your thoughts on paper. Experience tells us that writing helps to structure your thinking and the value of this should not be underestimated!

Once you completed this phase you arrive at Milestone 2: the final project contract which is listed in appendix B.

### Structure of the final project proposal

The experience of several students tells us that the following outline offers a good structure for the proposal:

1. Introduction
2. Problem statement: a clearly formulated definition of the problem with related key questions, that could be completed in the given time
3. Outline research: Theoretical approach and Methods
4. Philosophical justification: an account of the philosophical questions and methods in the treatment of the problem
5. Scientific/Technological justification: an account of the scientific or technological domain that is involved in the problem
6. Outline thesis in form of preliminary table of contents
7. Bibliography
8. Time schedule
9. Composition graduation committee

Four important criteria for a good final project proposal are:

- It should have a clearly visible scientific or technological component (it is not a purely philosophical thesis).
- The relevance of the research should be clear
- The research question should be sufficiently specific for a project to be finished in five months.
- The research question and the approach used should be clear

### Tips for writing a thesis proposal

1. Start in time!

*A good final project proposal usually has several versions that precede it. Beginning early helps you to formulate your thoughts at an early stage. After you have handed in your first proposal, it is easier for the supervisor to help you further, but if you have written down nothing it is difficult for your supervisor to find out what you exactly want to do.*

2. Be as concrete and clear as possible.

*In your final project proposal you present the research you want to do and the research question that you would like to answer. When you can explain this in a concrete and clear manner, it becomes much easier for lecturers to judge whether the research is possible and is at an appropriate level. Furthermore, if you can write in a concrete and clear manner, it helps you to visualize exactly what is possible. Often it helps you to discover and fix a lot of possible problems.*

4. Do not be afraid to make choices.  
*Doing research requires making choices especially when you are formulating the description of the assignment and your research question. In the research question you will describe what you will research in a very exact manner. For the description of the assignment this does not need to be so precise. Research is usually focused on a very specific topic within a field of research. To obtain a point of focus you will need to create boundaries between what you will and what you will not research. It can be difficult to choose what aspects you will research but keep in mind that this is usually not a choice between what is right or wrong. There are often multiple ways of approaching a subject. The point is that you are able to defend your choices. Making choices at an early stage prevents you from reading too much general literature and allows you to focus on more specific books and articles.*
3. Discuss your research question with others.  
*If you can explain your research question to an outsider, it will probably be alright. It means that your question feels 'natural' and requests to be answered. But when an outsider doesn't know what you are talking about, this of course does not have to suggest that your question isn't any good!*

## **2.6 Writing your thesis**

For writing the thesis you will have twenty weeks. In the beginning this may seem like more than enough time; however, it rarely is. You should bear in mind that a final thesis project will require a lot of iterations before you obtain the desired results. Before your final version of the thesis is completed, there probably will have been several versions of it. Start writing your thesis on time (do not delay!) and realise that realistically you will need the 20 weeks to finish it.

When you have finished about half of your thesis, it is good to choose a graduation date, creating a deadline to complete your thesis. It is also advisable to plan all your activities and include soft and hard deadlines. In this way you structure your activities and force yourself to make choices. While the moment of graduation may initially appear to be fictional, a good study plan helps to make this more realistic.

### **Tips for writing the thesis**

1. Before you start writing it is good to make a detailed outline of the chapters and paragraphs of the report.  
*When you were writing your final project proposal you probably have already created a final project outline. It will help if you determine the outline of your report before you start writing it. This helps prevent your report becoming a mess without a logical order. A house is also not built without an architect's detailed drawing. Such a framework should contain the topics of the different chapters, sections and paragraphs in a logical order. When you are writing the thesis, be flexible with this outline. It should help you to structure your thesis, and not hinder your research processes.*

2. Kill your darlings.  
*Sometimes you will have to chuck out entire pages of your report and start writing all over again. Often this may prove to be more fruitful than trying to tweak a text over and over again.*
3. Do not forget the link between the lines that you are writing and the general point of the thesis.  
*It is only natural that what you write down at the beginning may be a bit unguided. However, after a few months, you should have a clear idea about how you are going to finish the report. You will always keep adjusting little things in your paper, but keep asking yourself: what am I working towards and am I doing that right now?*
4. Print when you have to read large amounts of text.  
*It is not good for the environment and it costs you money, but text on paper reads a lot easier than on screen and helps to spot those spelling errors that you rarely see on a screen.*
5. Use a good system of annotations.  
*Do not write your notes on loose papers but use a notebook (paper or digital). Furthermore, keep a register of topics and literature references. In the beginning you may have slight difficulties remembering what you have read, but it is practically impossible to remember everything that you have read in detail. When you need that specific quote that seemed so fitting but you do not remember where you read it, you will be thankful when you have documented it. For references, programs such as Endnote are valuable tools. Making excerpts also helps a lot when you have to find something what you have read. If you do this electronically (preferably with the original page numbers of the book added), you can easily search for words and phrases. This is very handy if you want to quote!*
6. The books that you have bought and read during your study will not suffice for your thesis.  
*The electronic journals of the University Library are a fantastic source of knowledge, so use them. The same goes for Google Scholar, the Social Sciences Citation Index, the Philosopher's Index, Routledge and Wikipedia.\* Tip: if it seems that you cannot access an article, try to google the title. Many authors post their articles on their websites, although they can be outdated versions.*
7. Give some attention to the style of your references and the lay out of the whole thesis.  
*Standardizing this early in the process may prevent lots of burdensome work later on. Although different styles of references are used in the fields of PSTS, APA is a common one. As to the lay out of the thesis, there are no official requirements. Of course the text should be readable, so use a font that is sufficiently large and a line spacing of at least 1.5. Browsing other theses for their lay out may be helpful to discover what you do and do not prefer.*
8. Always have coffee or tea in your house or even whisky if things are not going too well.
9. Have a bit of discipline.  
*If there are other things that require your attention, such as a job, the last couple of courses that you need to complete, other courses that you are taking, the divorce of your parents, make a deal with yourself about how much time these other matters may use. Most supervisors do not object if you are not a full-time graduate student as long as it is clear what can be expected. If you have a job that takes up 15 hours, make sure that you can work the other 25 hours on your final thesis project. Consider the final project as a full-time job with the responsibilities that come with it. You work best in a regular rhythm, for example from 9 to 5 (alright, 10 to 6 is good too, it is about the principle). So your time as a student is really over once you start your final project.*
10. Make sure that the following information is on the cover page of your thesis:
  - Title Thesis
  - Qualification (Master Thesis)
  - Institution (University of Twente)
  - Date
  - Supervisor and second reader
  - Name Student
  - Programme (MSc PSTS)

## 2.7 The oral examination and the graduate colloquium

You complete the process of graduation with an oral examination and a graduate colloquium. During the oral examination the graduation committee will ask questions about aspects of your research such as the results, the premises, your understanding of the literature that you have read, and the way you answered your main question. Remember that you have worked on this final project for half a year, so you are the expert here. Questions will, however, mostly not address what you have already answered in your report. An important point of focus here are the choices that you have made as a researcher. "Why did you include this?" and "Have you considered that?" are typical questions that you can expect. Be assured, it is not an inquisition, but it does remain an important part of the process where your decisions as an academic are scrutinized. It will last approximately 45 minutes and it will be only between you, and the first and the second supervisors.

Your presentation (the graduate colloquium) should last approximately 30 minutes, after which there is about 15-20 minutes left for the audience to ask questions. The graduation committee might also take part in the discussions or ask questions. It is important that your presentation meets the usual demands. If you use visual aids, make sure that they are clear and readable with only a few lines per slides and do not use too many 'funny' special effects. Rehearse your presentation several times aloud (even if you think that you are an experienced speaker), so that you can talk fluently for 30 minutes. Do not forget to introduce the graduation committee before you start your presentation (if the first supervisor has not already done so).

During your presentation you will present the topic of your final project to the audience. Perhaps it is best to see this as a societal responsibility rather than an exam (which you already had before). This means that you can choose which elements of your research you will discuss. If you have three cases it might be best to only discuss one case thoroughly rather than all three superficially. Or when you are comparing two philosophical theories, it might be most interesting to only discuss the most controversial problems between them. Furthermore, if you want to make sure that the audience is able to fully grasp what you have been working on, it is advisable to keep your presentation simple and to the point.

After the presentation and the questions of the audience, the committee will leave for a few moments. When they come back you will receive your grade and appropriate certificates. The grade is mostly determined by the quality of your thesis. The oral examination can play a significant role here: if members of the committee do not agree with some of the choices that you have made in the report, you might be able to properly defend it orally. In general, the presentation does not play a role for your grade but can be considered as a decisive factor when there is doubt about what grade you should get. The entire graduation committee is responsible for your grade and factors such as working attitude and style of writing can also be considered. In chapter 6 the examination of the final project is discussed in more detail.

**Finally,  
don't forget to arrange a nice drink afterwards!**

### 3 Supervision

The guiding supervisors for your final project together form the graduation committee. The graduation committee should meet at least three times during final project: at the start, in the middle and at the end (green light). And after all the graduation committee is present at the graduation. This chapter focuses on the interaction with the first supervisor because the contact with this supervisor has the greatest influence on the content of the thesis and the process of completing the project. The responsibilities mentioned below are applicable to the first supervisor and the student.

#### 3.1 The graduation committee

In the final thesis project, the role of the supervisor is embedded in a graduation committee. The graduation committee consists of at least the first two members, but can be extended:

1. the supervisor and first examiner
2. a lecturer as the second reader and examiner
3. an external supervisor
4. an external subject expert.

The supervisor and second reader are lecturers of the departments Philosophy or STePS. In case of an external final thesis project an examiner of one of these departments is added as a member of the graduation committee. In case the supervisor is not yet fully qualified, he himself is supervised by a qualified person from his department, who is added as member in the graduation committee. The external subject expert is chosen in relation to the technology that is focused on in the thesis and often from an engineering discipline.

The student is coached by the supervisor on a daily basis. The supervisor and student meet frequently according to the agreement. They discuss the progression on the basis of pre-arranged submission of papers. When progression falters and no paper can be discussed, the student does not abort the sequence of meetings but uses the next meeting to discuss the situation with the supervisor. The second reader is kept informed from the start to the end of the final project, especially when for instance when a fairly good draft of a chapter is available for review. His/her consent is needed. The same procedure holds for the external supervisor and the external subject expert.

This general idea of working of the graduation committee is concisely explained in Milestone 2. Final Project Contract, appendix B.

Before graduation the examination board verifies that that student meets the requirements: all courses that are part of the student's programme have been passed. The final assessment of the student is delegated to the graduation committee, and the committee determines the grading together.

#### 3.2 Mutual obligations between the supervisor and the student

The supervisor and the student have duties and responsibilities towards each other. You can expect that your supervisor:

- will judge whether the research can be done within the timeframe and whether the assignment will be of an adequate level;
- will give directions for the execution of your research;
- will supervise the literature study;
- will give a constructive commentary on chapters and sections that you hand in;
- will ensure that suitable progress is maintained;
- will stimulate and motivate you;
- will examine the research.

Although your supervisor needs to invest a lot of time in your final project, remember that he/she only has 50 hours available for the entire process, including the phases of the literature study and writing your thesis.

Your supervisor can expect that you:

- will honour agreements/promises;
- will show initiative and do your best;
- will ensure that suitable progress is maintained

### 3.3 What should you discuss with your supervisor?

#### In the beginning

For some topics and agreements it is best if you discuss them and make them with your supervisor at the beginning of the final project. This reduces the chance for both parties that unpleasant surprises and misunderstandings will occur at a later stage. One of the first things you need to discuss with the supervisor is the frequency of the meetings. If a student works 40 hours a week, it would be advisable to meet once every two weeks.

Be clear on what the supervisor can expect of you. If you want to spend a few months extra on your final project because you really want to address a difficult problem, or if you prefer to complete it within the standard timeframe and are not worried about the grade, you should talk to your supervisor about your priorities. Are you able to spend 40 hours a week on researching or are there other activities that require your attention? The relation between you and the supervisor is more positive if you are clear about these matters.

Discuss how and when you can contact each other. For example, if you or your supervisor go on holiday for a couple of weeks or attends a conference abroad, you should make sure whether, and how, you can contact each other if that is necessary. When do you and your supervisor want to take holidays? Can you simply drop into his/her office if you have a question or do you need to make an appointment? Can you contact him/her at home or not?

Supervisors may differ in the way they guide their students. Is your supervisor cautious or very free with advice? Is he/she someone that wants to have every detail perfect or is originality or even boldness greatly appreciated? Does he/she limit the supervision to topics that relate to the thesis only, or can you also approach him/her for moral support? It would help to ask these questions and see who you are dealing with.

#### Further down the road

During the process of the final project you will have to make many appointments with your supervisor. Usually, before a meeting there will be a deadline for you to send the necessary material for the supervisor to read so that you can discuss it during the meeting. If you have been unable to meet the deadline, you should contact the supervisor who can then decide whether the meeting will continue or will be rescheduled. Before the end of the meeting you should make an appointment for the following meeting and possible deadlines.

To put it very briefly: despite individual preferences and style, it is advised to have regular meetings, to plan pre-agreed deadlines for submitting paperwork, to keep record of supervisors comments, to have in between assessment of the proceedings, and to plan ahead continuously. Be aware of delays especially if there are difficulties. Put any concerns immediately on the agenda for your next meeting, and try to work out a solution. Do not forget meetings, ignore comments, or hide difficulties. Remain focused on your final project.

### 3.4 PSTS Masterlab2

During the final thesis project, students attend the meetings of Masterlab2, led by the profile coordinators. You join the seminar when your thesis project proposal is finished by subscribing to the Blackboard site or by contacting the profile coordinator of your profile. In the Masterlab2, students report on their progress and share advice on practical matters. Moreover, during each seminar, students present parts of their work, which is then discussed by all participants.

### 3.5 Conflict resolution

It might occur that you are not getting the kind of supervision that you expected or that things simply turned out different than you agreed to.

First, discuss the problems with your supervisor. Possibly both you and the supervisor can agree about the problems at hand and take actions to change this. When these problems are specifically about your supervisor it might be difficult to talk about these matters. Still, such problems need to be discussed with your supervisor first before you involve other parties. If you have doubts about what steps you need to take in this specific case you could discuss your problem at one of the PSTS master seminars.

If there is a conflict that you cannot solve with your final project supervisor, it would be best to ask the profile coordinator to mediate. If there is a disagreement with the graduation committee about the quality of your work, the examination board can ask a third reader to give an independent verdict.

## 4 Examination of final thesis project

The graduation phase really begins when the graduation committee accepts the final draft of the thesis and allows the student to request graduation, which is Milestone 3. The criterion is that the draft (almost) fulfils the requirements. The green light meeting in which the graduation committee comes to this decision takes place at least three weeks before the planned graduation date. The graduation committee shows confidence in the capability of the student to deliver a thesis that matches the requirements according to the final remarks of the committee.

Now a lot of actions have to be taken and the student himself/herself is in charge:

1. The student uses the form *Milestone 3, Request for graduation*, appendix C. The student delivers a printed final draft version of the thesis, a summary (see below) and a report card that is printed from OSIRIS to inform the graduation committee about the study progress.
2. All subjects must be passed.  
The summary must not exceed 800 words (1 A-4) and recapitulates
  - a) The definition of the problem
  - b) The research method
  - c) The major results
  - d) The issues in the discussion
  - e) The major conclusions
3. The second reader assesses the final draft according to the criteria mentioned in this chapter and the agreement of the Thesis Proposal.
4. The supervisor signs the form *Milestone 3, Request for Graduation* that he/she received from the student
5. In case the student wants to include extracurricular courses on the report card, (courses above the 120 EC of the standard programme) this has to be requested now at the Examination Board, and communicated to the Educational Affairs Office.
6. The student sends the signed form to the Educational Affairs Office at least three weeks before the examination takes place.
7. The examination board approves the examination request by verifying the requirements.
8. This Educational Affairs Office sets the examination date and time, prepares the certificate and report card, arranges the rooms (for the oral examination and graduate colloquium), and prepares the convocation on the Student Portal.
9. The student distributes the printed thesis (including appendixes), one for every member of the graduation committee at least one week before graduation. The Educational Affairs Office receives an electronic version by email or on CD as a Word and PDF file.

Your graduation is examined on the following points:

- scientific and philosophical/historical quality of the work (thesis);
- creativity, the level of your own input, the level of independency, your working speed;
- the quality of writing (thesis);
- the quality of your oral explanation of your research (the oral examination and the colloquium).

### The scientific quality

Has the research been performed in a proper manner?

The scientific quality will be judged upon:

- the way you formulate the problem;
- the collection and application of literature;
- how you position your research in the scientific debate;
- the philosophical or STS approach that you use to answer your main question.

### The level of your own input and the level of independency

The product of your research is more important than your path towards it, but it is appreciated if you:

- come up with your own ideas of how to approach the problem and continue the research;
- ask critical questions;
- can handle and process criticisms;
- ask for help when required;
- stay in touch and prioritize progress.

### **The thesis**

Your thesis is the most important element to judge your research. Points to judge your thesis are:

- the way you structure your thesis (structure of chapters, appendixes, footnotes, logical order of text);
- readability and accessibility;
- the way your thesis fits its goal and the audience for which it is written (level of difficulty, accuracy, completeness, density of information);
- the discussion of your results; conclusions and suggestions for further research;
- references.

### **Oral**

During the oral exam you will be assessed to check whether you are able to

- give a brief summary of the thesis
- respond to critical questions and remarks on the set up of the research project
- respond to critical questions and remarks on the observations and conclusion of the thesis
- relate your research to knowledge and insights gained during the PSTS program as a whole
- engage with the examiners in discussion on the validity of your observations and/or conclusions for other domains than the one you focused on

### **Graduate Colloquium**

Important aspects of the colloquium are:

- the outline of the presentation and the clarity of the structure during the entire presentation;
- the use of media; whether it is proper and functional;
- your presentation skills; interaction with the audience, the quality of speech (audibility, tempo, intonation), ability to hold the attention of the audience;
- the way you are able to deal with the questions.

The graduation committee uses a standard assessment form listing all assessment aspects, and the relevance and weight of these aspects in each case is determined by the committee. You can find this form in appendix D.

## **5 What to do after graduation?**

### **Please return our questionnaire**

The programme needs your feedback on the programme, now from you as an alumni, looking back on your recent experiences in this programme. Please fill out the questionnaire and return it to Educational affairs.

### **Sign out and refund of tuition fees**

You can sign out by sending a written request to the desk Student Services (they have standard forms for this procedure), starting the first month after the one in which you have done your final examination. You will need to hand in your request within one month after graduation.

If you graduate before the end of the academic year, you can request a refund of tuition fees. The months July and August are not included so you can get a refund divided over 10 months. Refund of tuition fees will be executed after the Student Services desk has received an official date of graduation from the faculty.

If you have any doubts about the procedure you can contact the Student Services desk for further information. They are situated at the first floor of the Vrijhof, telephone: 2124.

If you are a Dutch student and make use of the OV, make sure that you hand it in on time. Within five working days after your right to the study finance or loan has ended, you will have hand in your OV at the Post Office.

### **Employment**

If you want to work directly after graduation, then you need to start applying as soon as possible.

**And don't forget to**

**Enjoy that you have finished!**

**Appendix A: Choosing a PSTS Profile (Milestone 1)**

Family name : \_\_\_\_\_

Given name(s) : \_\_\_\_\_

Student number : \_\_\_\_\_

I choose my profile to be:

- Profile 1: Technology and the Human Being (Coordinator P.P. Verbeek)
- Profile 2: Technology and Values (Coordinator P. Brey)
- Profile 3: Dynamics of Science, Technology and Society (Coordinator K. Konrad)
- PhD track Ethics & Technology (E&T) (Coordinator P. Brey)  
(To register for the E&T track you should have successfully passed the application procedure; the deadline for applications is at the end of April!!)

The chosen elective courses are:

Course code	Course name	EC's

Please make an appointment with the coordinator of your profile at the start of your second year, to discuss your graduation program.

If you plan to include an internship or a stay abroad in your profile, please contact the coordinator.

Student:	Signature:
Date:	
<b>Submit Before the 1<sup>st</sup> of July to:</b> Educational Affairs Office PSTS (EAO) – Cubicus C101	

**If you want to change the above indicated profile choice later on, you need to contact both profile coordinators.**

Faculty of Behavioural Sciences  
Master of Science Programme Philosophy of Science, Technology and Society  
Educational Service Centre/Educational Affairs Office PSTS (EAO) Cubicus C 101

## Appendix B: Graduation Study Plan (Milestone 2)

**Family name** : \_\_\_\_\_

**Given name(s)**: \_\_\_\_\_

**S-number** : \_\_\_\_\_

**Chosen Profile :**

- Profile 1 : Technology and the Human Being
- Profile 2 : Technology and Values
- Profile 3 : Dynamics of Science, Technology and Society
- PhD track Ethics and Technology

**Courses to be completed:**

Code	Course	ECTS credits	(planned) date of completion
	<b>Total</b>		

<b>Number of attended colloquia</b>	
-------------------------------------	--

<b>Title Final Project:</b>
<b>Short description ("what, why, where"):</b>
<b>External assignment (if applicable):</b> Name company/institution: Address:  External supervisor (and phone number):

<b>Graduation Committee:</b>		
Chair and Supervisor	:	
2 <sup>nd</sup> reader	:	
External supervisor	:	
External subject expert	:	
<b>Period:</b>		
Start	:	(month - year)
Expected duration	:	(in months)
If applicable, please mention the period when you will be abroad for final project work:		
Chair:	Signature:	Date:
Second reader:	Signature:	Date:
External supervisor:	Signature:	Date:
External subject expert:	Signature:	Date:
Student's signature:		Date:

- All courses have to be completed and passed and the required number of attended colloquia must be registered before you can start your final project. Print a Study Progress Review stating your progression in PSTS.
- Attach thesis proposal and a Study Progress Review and submit to the profile coordinator for approval.
- After signing the contract the student has to submit the **original copy** of this contract to the EAO PSTS including the approved thesis proposal.

Faculty of Behavioural Sciences  
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**Appendix C: Graduation Request (Milestone 3)**

Family name : \_\_\_\_\_

Student number : S\_\_\_\_\_

Address after Graduation: \_\_\_\_\_ (street)

\_\_\_\_\_ (pc – city)

\_\_\_\_\_ (country)

Phone number: \_\_\_\_\_

Title of the graduate colloquium:

\_\_\_\_\_  
\_\_\_\_\_

Examination date : \_\_\_\_\_ Time : \_\_\_\_\_

Colloquium date : \_\_\_\_\_ Time : \_\_\_\_\_ (preferred)

Number of guests : \_\_\_\_\_

My Thesis is : To be published in the Library  Confidential 

Graduation Committee declares that the final project is ready to request for graduation.

Signature Chair and Supervisor:

Signature 2nd reader:

Signature External member (if applicable):

After verification that the student meets the requirements for graduation according his or hers approved programme except for the final thesis, and that he or she is enrolled in the programme, the examination board authorizes the graduation committee as mentioned above to issue the diploma to the student.

Date:

Chair Examination Board MSc PSTS

Student signature:

 Attach a recent study progress review proving that all requirements but the thesis are passed.

 Submit signed copy of this form to the EAO PSTS, at least **3** weeks before graduation date, and distribute copies to all persons mentioned above.

 The final (approved) thesis and summary must be submitted - in print on paper- at least one week before the graduation date to all relevant people (members of the graduation Committee 3x) and the coordinator of the profile and by email to EAO PSTS ( 1x doc, 1x pdf)

Faculty of Behavioural Sciences

Master of Science Programme Philosophy of Science, Technology and Society

Educational Service Centre/Educational Affairs Office PSTS (EAO) Cubicus C 101.

## Appendix D: Final Thesis Assessment form

Faculty of Behavioural Sciences  
Educational Service Centre, Cubicus C 101

### Graduation Project Assessment Form

Student name : .....

Student number : ..... Bachelor's-/Master's student (cross out one that does not apply)

Study programme : .....

Final report – Title : .....

<b>1. Project execution</b> Evaluation by 1 <sup>st</sup> & 2 <sup>nd</sup> assessor	Poor	Sufficient	Amplly Sufficient	Good	Very good
1a. Definition of problem	<input type="checkbox"/>				
1b. Definition and consistent application of (core) concepts	<input type="checkbox"/>				
1c. Use of available relevant literature and theories	<input type="checkbox"/>				
1d. Selection, construction and justification of research methods and instruments	<input type="checkbox"/>				
1e. Quality of the design/development/evaluation of a product, tool or prototype	<input type="checkbox"/>				
1f. Choice and execution of analysis methods	<input type="checkbox"/>				
1g. Research technical aspects (reliability, validity, sample, non-response)	<input type="checkbox"/>				
1h. Conclusions, discussions and reflection	<input type="checkbox"/>				

<b>2. Report</b> Evaluation by 1 <sup>st</sup> & 2 <sup>nd</sup> assessor	Poor	Sufficient	Amplly Sufficient	Good	Very good
2a. Logical and consistent structure	<input type="checkbox"/>				
2b. Writing skills / readability	<input type="checkbox"/>				
2c. Presented according to agreed standards (APA)	<input type="checkbox"/>				

<b>3. Student's performance</b> Evaluation by 1 <sup>st</sup> & 2 <sup>nd</sup> assessor	Poor	Sufficient	Amplly Sufficient	Good	Very good
3a. Independence	<input type="checkbox"/>				
3b. Management of the work	<input type="checkbox"/>				
3c. Creativity	<input type="checkbox"/>				
3d. Social and co-operative skills	<input type="checkbox"/>				
3e. Effort	<input type="checkbox"/>				

<b>4. Presentation</b> Evaluation by 1 <sup>st</sup> & 2 <sup>nd</sup> assessor	Poor	Sufficient	Amplly Sufficient	Good	Very good
4a. Content	<input type="checkbox"/>				
4b. Structure & clarity	<input type="checkbox"/>				
4c. Answering questions	<input type="checkbox"/>				

**Comments:** (please use additional pages if required)

**Name and signature of the Supervisor and Second reader:**

..... Date: .....

..... Date: .....

Further explanation of the assessment aspects

### **1. Executed project**

#### **Definition of problem**

Justification, domain-specific character, practical and scientific relevance, innovative, systematic approach, limitations of the definition, core of the problem, context of the problem.

#### **Definition and consistent application of (core) concepts**

Command of concepts and content, relations between concepts and content, relevant theoretical framework, distinction between major and minor issues and relevant theories.

#### **Use of available relevant literature and theories**

Review of relevant literature, relevance of resources used, application of the resources used.

#### **Selection, construction and justification of research methods and research instruments**

Research design, selection of research methods, selection of respondents, selection of sample, operationalization of concepts, research materials.

#### **Quality of the design/development/evaluation of a product, tool or prototype**

Understanding of domain-specific designing, adequate application of the design, distinction between research and evaluation.

#### **Choice and execution of analysis methods**

Logic application of analyses related to problem definition, adequate analyses and justification of the analyses as related to the research questions.

#### **Research technical aspects (reliability, validity, sample, non-response)**

Presentation and analysis of relevant data, reliability, validity of the analysed data.

#### **Conclusions, discussion, and reflection**

Answering the problem definition, practical relevance of the results, full/societal context, discussion of the project results and implication of the results, quality of the research design, methods and instruments, strengths and weaknesses, further research recommendations, critical reflection.

### **2. Report**

#### **Logical and consistent structure**

Scientific style, appropriate for scientific audience, arguments and argumentation structure, internal logic, distinction between empirical and subjective information.

#### **Writing skills/readability**

Appropriate tone for both primary and secondary audience, lucidity, correctness, conciseness, introduction, summary, chapters, paragraphs, sections, definition of problem, conclusions, recommendations; grammar, spelling, punctuation, headings.

#### **Presented according to agreed standards**

Title-page, APA-standards, English summary (if required).

### **3. Student's performance**

#### **Independence**

#### **Management of the project**

Planning competences, efforts to meet deadlines.

#### **Creativity**

Creativity, originality, added value for scientific domain.

#### **Social and co-operative skills**

Searching for relevant help, processing required assistance and comments.

#### **4. Presentation**

##### **Content of the discourse**

Conciseness, relevance, selectivity, information density.

##### **Structure, question answers**

Academic level, attractiveness, use of AV-media, professionalism, comprehensibility for target audience.