

Guidelines for Theses & Projects

This document is intended for students considering to write a thesis in the MLO group. It provides information about how to find a topic, about the support that we offer to students, the expectations that we have, the (minor) formalities, and the grading scheme that we use. It also provides a short list of helpful documents which you should read if you write a thesis with us.

Computer Science students who want to write their Master thesis with us: please consult also the [general regulations for master theses and projects](#) of the IC school, and [here if you're an incoming student](#) from outside EPFL.

In any case, please make sure you have read and understood the [EPFL regulations on plagiarism](#).

Topics

The MLO group offers a wide range of possible topics for a Semester, Bachelor, or Master Thesis. There is a [list of topics](#) on the web, but these are not exclusive. If you have other ideas or interests, you are welcome to contact a advisor of your choice and talk about possibilities for a tailor-made topic. This makes sense, for example, if you have attended an advanced course, and there was a topic that you really liked and want to study in more detail.

Sometimes the topics are formulated a bit ambiguously. This is done on purpose, as for research-oriented topics it is often hard to predict the final outcome. In case you cannot find any new theoretical result, there are often other ways how you can make a contribution and successfully conclude your project. Please make sure that you discuss these alternative outcomes and deliverables at an early stage with your supervisor and do not decide this on your own.

Support

Subject to availability (usually, this is no problem), we can offer you an office space in the INJ building (equipped with desk and computer) to work on your thesis. You don't have to accept this offer, but if you do, this has the advantage that you are close to your advisor, other members of MLO, and other students that are writing their thesis. Obviously, discussing things, asking questions, and getting answers to them quickly is much easier then.

You can expect a weekly meeting with your advisor, depending on the state of your work. Usually, short meetings in between can usually be arranged spontaneously.

In general, we offer a lively and research-oriented environment, including seminar, reading groups, regular lunches, all year round. You are welcome to join: to listen, or even to give a talk about the work of your thesis.

Expectations

The role of your advisor is to guide you through your thesis: give possible directions, suggest ways out of dead ends etc. But the actual work has to be done by you. This should be self-evident, but let us make the point clear explicitly: we expect you to work independently in the sense that you tackle upcoming questions and problems yourself, before contacting your advisor about them. This is not because we're too lazy, but because the process of doing independent work is an indispensable part of any thesis. Also, you are expected to do independent literature search and reading. If all the papers you read in the course of the thesis work and all the references in your thesis were pointed out by your advisor, this is a bad sign. (On-line search and the EPFL library are great tools.)

You may get stuck, of course, after exhausting your possibilities, and then you are welcome to solicit help.

You are not required to find new theoretical results during your thesis, although this is always a goal that one should strive for. It is even possible to obtain the best grade without having new results, but in that case, other aspects of the thesis must be excellent (for example, the style of presentation, or software that you produced during the thesis).

There are research-oriented topics with the clear goal of finding new results, and there are topics that are more about implementing or summarizing known methods in a novel way. By choosing the topic, you can determine the research level of your thesis yourself.

Although it may seem picky to talk about page numbers (after all, some great research in history only took very few pages to write down), we still have to do it. If you produce a great new result, we're in fact satisfied with whatever number of pages it takes you to write it down properly. But in other cases, we also want to convince ourselves that you are a good craftsman. And this means to carefully and understandably write down the problem covered by the thesis, the history, and your contribution. In our experience, this requires a certain minimum number of pages; the table below can serve as a guideline.

Let us also emphasize that writing a lot per se is not a virtue. So unless you have good reasons, to be discussed with your advisor, do not exceed the lower page limit by more than 50%, i.e., be selective in what you include in your thesis. After all, not everything that can be written down is worth being read. To quote Blaise Pascal: *"Je n'ai fait celle-ci plus longue que parce que je n'ai pas eu le loisir de la faire plus courte"* ("I have made this letter so long only because I did not have the leisure to make it shorter", also attributed to Mark Twain and others).

Please also note: it is not your advisor's job to repeatedly proofread your thesis. As a rule of thumb, you should expect that he or she will read each chapter of your thesis only twice: once to give feedback, and once after you submitted the final version. You should therefore make sure that the parts you ask your advisor to read are not rough first drafts, but in as good a shape as you can manage on your own. Also, it is usually a good idea to produce solid write-ups of your findings as you go along; don't postpone "writing things down" to the end of your thesis. In this way you can also

incorporate feedback on how to improve your write-up that you got from your advisor for one chapter already in preparing the next chapter.

Formalities

The student is responsible to meet all requirements/deadlines which are given by their department or study plan.

Workload:

Master thesis IC internal at EPFL	4 months	full time	
Semester project (IC master)	14 weeks	312h	12 credits
Optional semester project (IC master)	14 weeks	228h	8 credits
Semester project (IC bachelor)	14 weeks	228h	8 credits

The numbers might be different if you come from another section.

Typically 1 credit point corresponds to roughly 30h of work.

Report:

- Master Thesis: There are not many formalities: you should supply the final result of your work in electronic form (PDF), and as a printed copy handed in to the secretarial office of your section.
- [EPFL infoscience collection](#) is a publication platform provided by EPFL-Library. Master theses can be published there if they are considered worthy of publication.
- Recommended length:

Master thesis	~50 pages
Semester project (bachelor/master)	~20 pages
- Outline of the report (see also this [tutorial](#)):
 1. Introduction. Introduce your problem (for this you need to cite some literature)
 2. Main part (several sections): Describe your work and your results. Assume the reader is familiar with basic math, but has no idea what you did and why you did it. Please cite all sources ("this proof is from [xx]", "this proof is similar as the proof in [yy]", "as in [zz] we first eliminate variable z", etc.).
 3. Conclusion: Are there any application/implication of your result? What are possible directions for future work (i.e. what would your work on next if you would have more time to work on this project).

Presentations (see guidelines below):

- You will have to present your work in our research group. Your talk should last 30 minutes.
- We will also ask you to give a presentation in the middle of the semester to a small audience. This will be an opportunity to reflect on your work and to get some feedback from colleagues. Your talk should last 20 minutes (max!).

Grading

The grade of your thesis is based on the written document you hand in at the end and the performance you demonstrate throughout the thesis work (including presentations). The grading scheme for all accepted theses is as follows:

- **6.0:** work and results are truly excellent (in case of Master theses the rule of thumb is that the quality of the thesis should be equivalent to work publishable at international workshops/conferences)
- **5.5:** thesis quality significantly exceeds expectations
- **5.0:** thesis meets expectations
- **4.5:** thesis partially meets expectations, minor deficits
- **4.0:** thesis meets minimal quality requirements; it has major deficits and it is significantly below expectations

Quarter grades (5.25 etc.) are also possible; the above rules extend in the natural way.

Presentation guidelines

If you feel insecure giving presentations or if you are not sure what to put on your slides you can either find many good tutorials on the web, or you can ask your supervisor. In any case, your presentation should cover the following:

1. Problem statement and motivation (why do you care about the problem?, why is it important?, what did others do?)
2. Your approach (what is your approach to solve the problem, preliminary/final results: experiments, or proofs)
3. Future work and implications (try to be precise and argue with)

Do not hesitate to ask your advisor if you have any questions about what to include in your talk. Especially, it could be a good idea to send him/her a draft of your slides a bit ahead of the presentation date. Please try to [stick to the allotted time](#) of the talk.

Helpful documents

- We recommend that you write your thesis with LaTeX. Some additional resources on LaTeX:
 - https://github.com/HexHive/thesis_template - a possible EPFL thesis template. You are not required to use any template, but feel free to use/adapt it if you find it useful
 - <https://github.com/VoLuong/Begin-Latex-in-minutes> - getting started with LaTeX
 - <http://www.maths.tcd.ie/~dwilkins/LaTeXPrimer/> - tutorial on LaTeX
 - <http://wch.github.io/latexsheet/> - cheat sheet collecting most of all useful commands in LaTeX
 - <http://mirror.switch.ch/ftp/mirror/tex/info/first-latex-doc/first-latex-doc.pdf> - example how to create a document with LaTeX
 - <http://en.wikibooks.org/wiki/LaTeX> - detailed tutorial on LaTeX