# Seminar 2 in TDDD89

## Purpose

To practice formulating your own research questions and introduction. To practice formulating proper academic English.

## Reading material

The reading material here pertains to a number of common themes of final theses. Within your teams, choose a theme and the two papers pertaining to that theme based on their applicability to the thesis that you will be working on during the course. Many will find the guidelines provided by Kitchenham, as well as Runeson & Höst to be generally applicable for theses in many industrial settings. However, if you have already read these references earlier or believe that your particular theses will have a different focus than what is targeted by these two guidelines papers, you also have an option to read references relevant for a number of other types of theses. We refer to the specific [Master’s thesis themes](https://docs.google.com/document/d/1RdRVZctwNsY5hXM0IKNh8__KvZAoOnu62L72wpcXwro/edit#heading=h.hmjuhnsmjfsn) that you read in the General course description document when referring to “themes”.

* You will need to read the thesis introductions written by the others in your seminar group, as well as one of the following references on how to conduct certain types of studies.
* For those who plan to conduct studies on the effects of software systems in industrial settings **(primarily students in themes 1, 3):**
  + B. A. Kitchenham, S. L. Pfleeger, L. M. Pickard, and P. W. Jones. “[Preliminary guidelines for empirical research in software engineering](https://login.e.bibl.liu.se/login?url=http://dx.doi.org/10.1109/TSE.2002.1027796)”. IEEE Transactions on Software Engineering, 28(8):721–734, August 2002.
  + P. Runeson and M. Höst. “[Guidelines for conducting and reporting case study research in software engineering](https://login.e.bibl.liu.se/login?url=http://dx.doi.org/10.1007/s10664-008-9102-8)”. Empirical Software Engineering, 14(2):131-164, Apr. 2009.
* For those who plan to study usability aspects of software systems **(primarily students in themes 3):**
  + Alonso-Ríos, David, et al. "[Usability: a critical analysis and a taxonomy](http://dx.doi.org/10.1080/10447310903025552)." International Journal of Human-Computer Interaction 26.1 (2009): 53-74.
  + M. Matera, F. Rizzo, and G. T. Carughi, Web Engineering, ch. [Web Usability: Principles and Evaluation Methods](https://doi.org/10.1007/3-540-28218-1_5), pp. 143–180. Berlin, Heidelberg: Springer Berlin Heidelberg, 2006.
* For those who plan to study Machine Learning topics **(primarily students in theme 5):**
  + Vanschoren, Joaquin, et al. "[Experiment databases](https://doi.org/10.1007/s10994-011-5277-0)." Machine Learning 87.2 (2012): 127-158.
  + R. Wirth and J. Hipp, “[CRISP-DM: Toward a standard process model for data mining](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.198.5133&rep=rep1&type=pdf),” in Proceedings of the 4th international conference on the practical applications of knowledge discovery and data mining, 2000.
  + Caruana, Rich, and Alexandru Niculescu-Mizil. "[An empirical comparison of supervised learning algorithms](https://doi.org/10.1145/1143844.1143865)." Proceedings of the 23rd international conference on Machine learning. ACM, 2006.
* For those who plan to make use of internal code quality evaluations:
  + Moser, Raimund, Witold Pedrycz, and Giancarlo Succi. "[A comparative analysis of the efficiency of change metrics and static code attributes for defect prediction](https://doi.org/10.1145/1368088.1368114)." Proceedings of the 30th International Conference on Software engineering (ICSE). ACM, 2008.
  + Sjøberg, Dag IK, et al. "[Quantifying the effect of code smells on maintenance effort](https://doi.org/10.1109/TSE.2012.89)." IEEE Transactions on Software Engineering 39.8 (2013): 1144-1156
* For those who plan to do hardware construction theses (**primarily students in theme 2)**:
  + Kuon, Ian, and Jonathan Rose. "[Measuring the gap between FPGAs and ASICs](https://doi.org/10.1109/TCAD.2006.884574)." IEEE Transactions on computer-aided design of integrated circuits and systems 26.2 (2007): 203-215.
  + Reynoso-Meza, Gilberto, et al. "[Controller tuning by means of multi-objective optimization algorithms: A global tuning framework](https://doi.org/10.1109/TCST.2012.2185698)." IEEE Transactions on Control Systems Technology 21.2 (2013): 445-458.
* For those who plan to do security evaluation theses (**primarily students in theme 6)**:
  + Holm, Hannes, Mathias Ekstedt, and Dennis Andersson. "[Empirical analysis of system-level vulnerability metrics through actual attacks](https://doi.org/10.1109/TDSC.2012.66)." IEEE Transactions on dependable and secure computing 9.6 (2012): 825-837.
  + Shahriar, Hossain, and Mohammad Zulkernine. "[Mitigating program security vulnerabilities: Approaches and challenges](https://doi.org/10.1145/2187671.2187673)." ACM Computing Surveys (CSUR) 44.3 (2012): 11.
* For those who plan to do theoretical theses (**primarily students in theme 4):**
  + Halmos, P. R. “[How to Write Mathematics](https://www.math.uh.edu/~tomforde/Books/Halmos-How-To-Write.pdf)”, L'Enseignement Mathématique,16 (1970).
  + Knuth, D. et al. “[Mathematical Writing](http://jmlr.csail.mit.edu/reviewing-papers/knuth_mathematical_writing.pdf)”, Stanford University, 1987.

### Preparations

Read the material specified in the **Reading material** section above pertaining to seminar 2. Each student needs to read *one* of the papers given above, and each team needs to divide the material appropriate for your theses so that you have two different papers to discuss as you come to the seminar.

Write the introduction of your *thesis plan*. In particular, outline the type of research question that you believe that your project will be about, given the guidelines or instructions given in the papers above.

Write the beginning of your thesis plan. Start using the appropriate document template for master's theses at [IDA](http://www.ida.liu.se/edu/ugrad/thesis/templates/index.en.shtml)/[ISY](https://www.isy.liu.se/edu/xjobb/anvisningar_exjobbare.html) from the start. The most important part of your thesis plan is defining research questions. Try out a few tentative questions and write them all down as part of your introduction. Later, you will get to remove and revise them. Make sure that the questions are somehow possible to answer and relate to the effects of that which you expect to produce during the thesis project. Take inspiration from the material that you are to read as preparations. Do not fear writing down too many questions at the start as you will have ample opportunities to revise them and drop some of them later. Aim to write 2 A4 pages, not more.

#### Review

Read the other introductions from your group and answer the questions below.

### Questions

For the paper in the reading material above that you have read, answer these questions:

1. What are the main results, or guidelines, of the paper that you read? Provide a summary and give some concrete examples of either what the authors suggest when writing a research paper, or how they themselves formulate research questions and try to answer them.
2. How can you make use of the results or advice provided by the paper that you read, in order to make an assessment of tentative research questions for your own work?

For each thesis report that you read, consider these questions:

1. Are the research questions easy to find, clear and with a reasonable scope compared to the master's thesis you read before Seminar 1? Justify your answer.
2. How would you assess the *introduction* of the thesis plan based on the [grading rubric](https://www.ida.liu.se/~TDDD89/material/Grading_rubric_TDDD89_2017.pdf) (attributes *Introduction*, *Organization* and *Language and form*)? Justify your assessment by referring to the specific formulations in the rubric.

### Submissions

Upload your *thesis plans* to LISAM **two days** before the seminar. Make sure to have a Word/PDF file in your group folder for everyone to read. Your thesis plans need to be available to all other members of your teams as well as your seminar leaders (Ola, Azeem, Aseel or Ingemar).

Your answers to questions 1-2 as well as A-B need to be available on LISAM **at the seminar**.

### The seminar

During the seminar, you will first present the papers that you read and answer questions A and B, and then compare your answers to each question above in turn in your seminar groups. Each question makes explicit reference to one or several items from the reading list. Make sure to outline concrete suggestions for improvement. Be the critic you wish to have.