

Seminars: Admin and preparation

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Admin

- **Studienleistung** (course work): A **talk** of ~ 80 minutes; the remaining 10 minutes of the session will be used for the discussion.

A **handout** (in English) of one or two pages, summarising the most important aspects of your talk as well as a few exercises for the other participants. These exercises should encourage the participants to engage with the material of the talk.

- **Prüfungsleistung** (examination; will be graded): A **written report** of the talk; this report is due one week before the talk.

In case you take this seminar as Proseminar or ungraded seminar, this report is not mandatory but highly recommended.

- You will be contacted a few weeks before your talk for a meeting, giving you the opportunity to discuss questions and the contents/structure of both the talk and the report.
- The exact number of ECTS etc. depends on the applicable Prüfungsordnung and Modulkatalog.
- As a courtesy to your fellow students and to maximise the impact of the seminar for you, we highly recommend to attend regularly and to participate actively in the sessions. In particular, you should not hesitate to ask questions during the talks in case you want to see further explanations/examples, etc.!
- L^AT_EX templates for reports and handouts will be provided.

Foundations

- The basis of a seminar talk/report is understanding the material.
- Well-structured mathematics is easy to present and comprehend.

Most of the following hints are consequences of these facts and common sense.

Level 0: Research

- Start your preparation early!
- Understand the material for the talk
- Consult additional sources; starting points for finding literature:

<https://www.ams.org/mathscinet> (from within the UR network)

<https://zbmath.org/>

<https://books.google.com>

- Be critical towards literature, become independent of the sources, and develop your own view on the material
- During all stages: Use the help we offer!

Level 1: Raw concept

- What is the main goal of the presentation?
- Outline the main structure of the talk

Level 2: Detailed concept

- Be precise
- Be concise
- Put important stuff at the beginning (so it will not get lost in time trouble)
- Highlight important ideas/steps instead of technical details
- Try not to end with a subtle technical detail, but rather with an example, an open problem or a summary/conclusion
- Prepare for the likely case that the talk takes longer than expected and for the extremely unlikely case that the talk is shorter than expected; it can be helpful to give a practice talk at a blackboard in front of volunteers or a ghost audience
- Take into account what happens in the seminar before and after your talk; contact the other participants to coordinate

Level 3: The written report

- The written report should be more detailed than the talk. We expect you to understand more details than what you will be able to present in the talk.
- The written report should be *your* account of the material – choose the structure, pace, focus, and level of detail suitably and adapted to the needs of the seminar.
- In particular: Formulate the report in your own words and cite all sources appropriately! All use of AI tools that goes beyond language polishing needs to be declared transparently. Plagiarism and lack of attribution will get you into serious trouble.
- As always in mathematics: Every statement requires a proof or a reference.

Level 4: Presentation

- Memorize the first few sentences of the talk
- Be independent of your notes; look at the blackboard/audience instead; this will reduce the risk of gaps/typos and will make the talk much easier to follow
- Write the title of the talk on the board
- Start with a quick overview of the talk
- Always be transparent about what is important and what has lower priority; focus on key ideas
- All definitions should be shown on the board
- State theorems in such a way that it is clear what the hypotheses and what the conclusions are
- In proofs, the logical structure should be clear from what is written on the board
- Give the audience enough time to digest your arguments; do not erase/cover up things that you just wrote on the board.
The front and back blackboard have different advantages and disadvantages; try to plan ahead for this difference.
- Don't try to impress the audience with your knowledge, but try to make the material look as simple and clean as possible
- Write clearly and in a well-structured manner on the board; use colours
- Motivate or anticipate definitions/theorems/proofs by suitable examples or figures
- Keep eye-contact with the audience
- Try to get the audience interested in the topic and involved in the talk; asking simple questions to the audience gives the others precious time to think about the material – even if nobody comes up with an answer.
- Would you be able to follow your own talk?!
- Don't be afraid of questions by the audience! Such questions will give you helpful feedback on whether the audience is able to keep up with the presentation and will create a more lively and interactive atmosphere.
- Enjoy giving the talk!