

# Scientific Writing Checklist

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This document is intended to serve as a simple indicator whether the most basic requirements of scientific writing are fulfilled in a given scientific document (Thesis or seminar report, scientific article, etc.). Authors should check whether their document fulfills these criteria before submitting a draft of a thesis / seminar report to someone else for feedback. This will generally strongly increase the quality of the final document, as reviewers can focus on content-related issues, as opposed to these rather formal issues.

## Document Structure

- **Does your document tell a consistent story to the reader?**
- Is the main research result of your work clearly and unambiguously communicated?
- Are all concepts explained (or references provided where they are explained) that are necessary for understanding the main part of your research?
- Does the structure of the document feel sensible; does the content “flow” naturally?
- Do all sections of your document have a sensible length? (Overly long chapters and sections should be considered to be broken up into smaller pieces; sections /subsection shorter than half a page should be considered for merging with other sections.)

## Language

- **Do you use precise and clear language throughout the whole document?**
- Is colloquial language avoided consistently?
- Are simple and clear words and phrases preferred over unknown words or unnecessarily long and complex phrases?
- Are technical terms used *exactly* according to their correct meaning?
- Is the general quality of language (grammar/choice of words) appropriate for a scientific document?
- There should be no sentences starting with a mathematical symbol, abbreviation, etc.
- Mathematical equations should always be embedded into normal sentences.

## Figures

- Are all figures formatted nicely and visually appealing?
  - No bad scans, badly scaled screenshots, etc. – generally, prefer vector graphics wherever possible.
  - Not too large (wasting a lot of space, looking disproportionate), not too small (hard to recognize details). This also applies to line widths, which should neither be too thin nor too thick.
  - Visually appealing *and* clearly distinguishable color map used throughout the thesis.
  - No unnecessary details that are not relevant for the information you wish to convey.
- Is the content of all figures understandable by just reading the figure caption?
- Are all text elements in figures readable? (Text size in figures generally should be consistent across figures and should be about 1pt smaller than normal text size in the document.)

- Are all axes in figures labelled correctly, including unit specifications? (The correct way to specify units is “quantity (unit)”, e.g. “Time (s)”.)
- Are all figures referenced in the text?
- For figures that are reproduced from a previous publication, the reference to that publication should be provided in the figure caption.

## References

- **Are references given wherever results or knowledge provided by previous other authors are restated?**
- References are not grammatical objects, i.e. “Refer to [4] for further information.” is not a grammatically correct sentence. On the contrary, “Refer to Einstein et al. [4] for further information.” or “Moreover, a general relation between relativity and speed of light has been found [5].” are both valid sentences.
- Are original sources cited, wherever possible? For instance, one should always cite the original 1960 paper of Kalman regarding the standard linear Kalman filter, instead of one of the many secondary sources on this subject. The same is true for other subjects: Try to find the original source, where a subject was first explained.

## Miscellaneous

- Are all mathematical variables introduced and specified before first usage?
- There should be no code in your main document. If really necessary, this should be moved to the appendix. If algorithm design is a major part of your work, you should provide pseudo code in the main text.
- Do text formatting, diagrams, tables, etc. follow a uniform design? (Text fonts, color codes, symbols, etc.)
- Equations should always be referenced as “equation (4.12)”, instead of just “(4.12)” or “equation 4.12”. In Latex, this is achieved using `equation~\eqref{equationlabel}`.