BASIC RECOMMENDATIONS FOR FINAL THESIS PREPARATION

Dear students,

The faculty issues methodological guidelines for preparing bachelor's or master's theses, which you must follow. Each faculty has its own set of instructions – although this might seem obvious, there are still students who submit their thesis dressed in the "coat" of another faculty. Therefore, study and include all mandatory chapters relevant to your type of thesis (e.g., study, experiment, development, etc.). Do not look for templates – there are no correct ones. Start with a blank document and create all the required chapters yourself. One of these chapters is the declaration; you must ensure you use its most up-to-date version. À propos, make sure you are always working with the current methodological guidelines (which, again, might seem obvious).

These recommendations reflect my personal requirements and do not constitute an official department or faculty document.

Content

Sources, References, Citations

The selection of appropriate scholarly literature is the cornerstone of success and a key aspect of the entire thesis. Therefore, pay special attention to the sources from which you draw your ideas. As a CZU student, you can access licensed scholarly literature databases (e-resources) through the university library. Numerous scientific journal publishers exist—some offer their databases openly, while others require a subscription. The library provides subscriptions to the most prestigious publishers, and you can access them using your university account. Through e-resources, you can access the Web of Science database, a valuable repository of scientific publications. In addition to lending books and journals, the library also provides access to a wide range of e-books via the e-book module. While scientific studies are the primary source for a final thesis, academic books can also be effectively used as primary references.

Google Scholar is an excellent search engine for scholarly literature and can be used freely. However, access to the full text of found publications may be limited by subscriptions (which you generally have access to via e-resources). Be cautious when searching using regular web search engines. The information you find can be helpful in organising your thoughts and understanding, but such sources (typically websites) must never be cited.

Avoid citing grey literature and academic materials such as textbooks, lecture notes, or other theses. Remember that your text will be checked for plagiarism, and reviewers tend to be well-read—they often detect similarities directly. Even if a similarity is formally acceptable, using such literature as a reference in a final thesis is still inappropriate. Again, grey literature can be helpful for studying the topic, but it does not qualify as a scientific source.

To manage your literature sources, always use citation managers. There are many to choose from, with Mendeley being a trusted bibliographic library, and Zotero gaining popularity recently. These are usually desktop applications with browser plugins that allow you to easily download sources while browsing and, more importantly, manage all your references. Using a citation manager requires minimal effort but will save you much time. Citations in the text become interactive elements that can be edited, updated, and automatically formatted in bulk. Please remember that proper citation and referencing of all sources is fundamental to the final thesis.

There are many citation styles, and scientific journals often have their own specific requirements. Choose a citation style that is in accordance with the methodological guidelines. If no style is explicitly prescribed, opt for a more conservative option. You must cite directly in the text immediately after the borrowed idea, and a complete bibliography must be included at the end of the thesis with full details of each source. One consistent citation style must be used throughout the thesis—this is ensured by using a citation manager; otherwise, you'd need to manually edit dozens of citations.

A common (though incorrect) way of writing a literature review—especially in bachelor's theses—is to write individual paragraphs based on single sources (e.g., one paragraph = one citation). A proper review should not be written this way. A literature review is a synthesis of the sources you've read, written as a coherent text that is easy to read and rich in information. One paragraph may include multiple citations; the important thing is to write a comprehensive section (one or several linked paragraphs) that thoroughly explains one key idea/topic/theme.

Citations are always part of the sentence (meaning the period comes after the reference—your citation manager won't do this for you). Choose the year of publication wisely—if you are referring to a time-sensitive fact, select a study that is temporally relevant. Apart from generally accepted facts (e.g., chlorophyll is a green pigment), every borrowed idea, study result, forecast, or conclusion must be cited. Depending on the topic and type of work, the number of primary sources from scholarly literature should be at least 30–60 publications.

You can find additional writing and organization tips on the university library website. A consultation and search service is also available upon request as part of your studies.

Structure of the Thesis, Typography

At the beginning of your thesis, you typically define the mandatory chapters (to ensure you don't forget any during the writing process), and as you read more sources and add more content, you develop the future structure of your work. The thesis must be logically structured, with chapters that follow one another smoothly, and the text should gradually evolve to create a narrative, moving from general to specific and back to general.

Overly fragmented text is disruptive to the reading experience and raises questions. On the other hand, insufficient structuring can lead to misunderstanding, misinterpretation, or loss of reader engagement. The structure of the text must be considered on two levels: the overall layout of subchapters and the number of paragraphs within each chapter. Chapters represent complete sets of related ideas. The level of a chapter depends on its significance and the breadth of the topic. Chapters can be broken down into levels. A first-level chapter is the highest (general) level, typically including an introduction, objectives, literature review, methodology, results, discussion, and conclusion. In the Methodology chapter, these main chapters can then be subdivided into second-level sections, such as Study Area, Materials (Data), Methods, Evaluation, etc. A third-level heading may be used (likely only in the literature review), but anything beyond level three is not considered appropriate.

After the number of a first-level chapter, place a period (e.g., “1.”), while no period is used for second- and third-level headings. See the example below. A first-level chapter should always start on a new page. You can find a tutorial for creating custom multilevel list styles in MS Word online. It is important to use styles so that references to chapters become interactive and can be navigated within the digital version of the document.

Example:
1. Methodology
1.1 Study Area
1.2 Materials
1.3 Methods
1.3.1 Preprocessing
1.3.2 Statistical Evaluation

Use a moderate serif font consistently throughout the thesis. Font size changes are only allowed for:

- Larger text: chapter titles
- Smaller text: figure and table captions

Font size should not be changed elsewhere. Avoid other formatting changes unless necessary (e.g., italics for function names). No other graphical alterations are permitted.

Another critical aspect is text and page formatting, or macrotypography (typesetting). The thesis should be formatted for single-sided printing, and text should be justified. A common issue caused by poor formatting is when paragraph fragments (typically 2–4 sentences) appear at the top of a new page or are left dangling at the end of the previous one—this must be avoided. Never write one-sentence paragraphs.

All prepositions and conjunctions must have non-breaking spaces. Justified alignment often leaves them stranded at the end of lines. Prepositions and conjunctions must always stay with the word they relate to—hence the need for non-breaking spaces.

Page numbers should be visible starting from the Introduction and aligned at the bottom right. Pages before that should remain unnumbered (or with hidden numbering).

Graphic Design

Be modest when it comes to formatting your text—do not use any visual effects. The entire thesis must be written in black text on a white background; using different font colours is prohibited. Other common text formatting options (underlining, italics, bold) should be used sparingly and never combined.

Accompanying graphics (such as images, graphs, maps, etc.) must be relevant to the text. It is common for literature reviews to include images taken from publications or the internet without citing the author. Using an image from a published study must be well justified, and proper citation is mandatory. Web images can be used to help illustrate or clarify the topic. However, the ideal approach is to create your own original graphics, for example, to demonstrate the methodology or its components.

All images must include a source. For borrowed works, include the author and year in the figure caption, and provide a full reference in the bibliography. You may adapt borrowed images (e.g. by translating them), in which case the citation should include the note "modified". If you are using your own original graphics, indicate "own source" in the caption—no year is necessary. In the Results chapter, only your original graphics are expected; therefore, no citation is required.

You must only use print-quality graphics (at least 150 DPI, preferably 300 DPI). Problems often arise when using borrowed graphics with low resolution. If the image is not absolutely essential and cannot be replaced, using low-resolution graphics is considered inappropriate.

You should also pay attention to the formatting of tables. Tables are suitable for presenting specific parts of your thesis, typically in the Methodology and Results chapters. Their design must be minimalist, without graphic effects. It is acceptable to use a smaller font size than the main text, or to bold specific cells (for example, to highlight significant results).

Figure captions must always appear below the image. Table captions must always appear above the table. Each figure or table must be numbered separately, using a continuous ascending sequence. Cross-referencing must be used so that all references are interactive in the digital version of the document. You may reduce font size in captions by 1–2 points maximum. Every figure and table must be referenced in the body text—you cannot insert a table or figure without referring to it and explaining it in the text.

If your thesis includes map outputs, you must study cartographic principles independently (see references provided). Your own graphics are just as important as the text surrounding them—they must not be neglected.

All official CZU logos can be found online. Please study the faculty's graphic manual and make sure to use the correct logos in the appropriate places.

Sentence Structure, Style, Deixis, Grammar

Flowery, overly complex compound sentences can do more harm than good. If you are not confident in your sentence construction skills, avoid sentences with more than one subordinate clause. A common issue (aside from the fact that readers may get lost midway through) is incorrectly placed commas, which can change the meaning of a sentence. The stylistic quality of your text is crucial for reader understanding and maintaining attention. Sentences must follow logically—each one should continue the narrative or add further detail.

Be especially mindful of deictic words—those whose meaning depends on the context or situation. These typically include textual referents (endophora) like “this,” “that,” “these,” “the aforementioned,” or full-meaning demonstratives (exophora) such as “this one,” “that one,” etc. Their use is acceptable, but the meaning must be absolutely clear and unambiguous to the reader.

Flawless grammar throughout the thesis is essential. Any grammatical mistake is unacceptable. Common errors include subject–verb disagreement, incorrect prefixes, prepositions, or conjunctions. You may naturally make mistakes during writing, and over time, you might stop noticing them in your own text.

To help with this, ask someone else (e.g. a family member) to read through your thesis. They don’t need to understand the topic; their job is to focus on grammar and style. Having another person proofread your text is usually necessary before submitting the final version.

Meaning and Content of Primary-Level Chapters

The Introduction is a general chapter where you explain the importance of the topic, summarise what has already been done in the field, and clarify how your thesis is different, what its benefits are and what makes it new. There is no need to cite sources in the introduction. This section should consist of general statements without referencing conclusions from other studies. Its length should be about 2–3 pages.

The Objectives section is not just a copy of the objectives from your assignment. It is a detailed definition of the achievable goals of your research. The objectives must clearly reflect the thesis content and be stated in a way that allows them to be evaluated. This chapter should also include a few specific research questions. If your work includes hypotheses, you must address them in the Conclusion. The length of this section should be 0.5–1 page.

The Literature Review is an extensive follow-up chapter that presents specific topics and facts related to your thesis. In this chapter, you must demonstrate that you truly understand the topic. To write a good literature review, you need to read a large amount of scientific literature, primarily from international sources (at least 30–60 scientific studies, depending on the type of thesis). The goal is to thoroughly describe what is currently known, how others have addressed the topic, and what gaps still exist. The literature review should show that you are well-versed in the field, aware of its challenges, familiar with competing research, and able to identify areas that require further scientific exploration. Citations are essential here (see previous section). The literature review should be about 7–10 standard pages of dense, information-rich text. Avoid stretching the review unnecessarily with empty phrases or vague generalizations.

The Materials and Methods chapter explains in detail how the research was conducted and how the results were achieved. The methodology must be described thoroughly enough that anyone could replicate the procedure. This chapter is usually divided into materials (inputs, data) and methods (processing, analysis, evaluation). A study area section is often included—describe relevant features based on your research questions. Include only facts that may influence the analysis (e.g., topography, climate, land cover, etc.).

The Results are derived from the methodology. Here, you describe what you found. These are objective findings, the concrete outcomes of your work. This section often includes tables and figures (graphs, maps, etc.) to supplement the written text. Focus solely on reporting the results—do not interpret them here.

The Discussion is where you interpret and explain your results. It is not a repetition of the Results section but rather its explanation. Consider all factors that may have influenced your outcomes—for example, that the results are valid only in coniferous forests in a Mediterranean climate and cannot be generalised globally. Consider the environment (climate, topography, land cover) and the input data. You should also compare your results with those of other authors—explain why there are similarities or differences.

The Conclusion is a general chapter (about 2–3 pages) where you summarise the topic as a whole, describe the benefits of your work, and outline future possibilities. It is a synthesis of your findings, a restatement of the key results, a reflection on their limitations, and a suggestion of future research directions that could build on or expand your work.

The Abstract is a special chapter. Although it is the first chapter in the thesis, it is usually written last. In 1–3 paragraphs (max. 1 page), you summarize the introduction, literature review, methodology, results, and conclusions. It is the most linguistically demanding part of the text. The abstract is likely the only part read by someone outside your committee, so it must be clear what you did, how you did it, what you found, and what it means. The abstract should quickly introduce the topic, outline the materials and methods used, and highlight the most important and interesting results.

Do not start with “This bachelor’s/diploma thesis deals with…” — the reader already knows what they're reading. Instead, begin with a general opening sentence relevant to your topic (e.g., “Unmanned aerial systems offer a promising tool for monitoring environmental phenomena”) and then continue from there.

Mandatory parts of the thesis also include the Table of Contents, Declaration, and List of References. The Table of Contents should be auto-generated using heading styles, such as checking line breaks and unifying the font. The current wording of the student declaration (including a statement on AI use) is always listed in the most recent methodological guidelines and university/faculty regulations. The reference list is generated automatically by the citation manager according to the selected citation style. However, you must check that no essential details are missing—you can adjust them directly in the citation manager.

Other optional chapters may include Acknowledgements, and lists of Figures, Tables, and Abbreviations. Acknowledgements are typically used to thank individuals who assisted you with the thesis (e.g., consultants). Lists of figures/tables are optional—include them only if needed. A list of abbreviations is also optional and, in most cases, unnecessary. You must explain each abbreviation upon its first occurrence in the text; no further explanation is needed afterwards.

Available Software, Publications, AI

As part of your studies, you have access to university-licensed software. For the purposes of your final thesis, you may use, among others, ESRI ArcGIS Pro with all the necessary extensions. In the case of processing aerial data, I can provide access to Drone2Map. Instructions for obtaining an ArcGIS license are available online. For advanced publishing and visualisation of results, you can also use ArcGIS Online, ArcGIS Insights, or ArcGIS Dashboards. Logging into these applications uses the same credentials as ArcGIS, as described in the aforementioned guide.

If any ESRI product does not function as expected, you may contact the official distributor (Arcdata Praha, s.r.o.)—for example, via their hotline support service. The university license includes full support provided by the distributor. Of course, apart from the ArcGIS suite, you may also use any suitable alternative software that meets your needs.

Consider publishing your results in another format if they are interesting or significant. This could involve uploading the data to a simple cloud storage service or using online tools to present geospatial data, including maps, graphs, or tables (see the abovementioned tools). In your thesis, you may then include a link or a QR code that redirects to the relevant storage or application.

In exceptional cases, publicly noteworthy results may also be published in a popular or semi-scientific format in journals aimed at the professional public, such as the magazine *Ochrana přírody*, or other subject-specific publications.

Use AI tools—but use them wisely. A continuous text written by ChatGPT is unlikely to hold up well under the scrutiny of a thesis reviewer. However, no one will be surprised if you use general AI tools to assist with your literature review or to look up specific facts. That said, AI will not write your thesis for you. Learn how to prompt AI effectively and always verify its output. When working with scientific literature, use the right tools, such as SciSpace and ResearchRabbit. SciSpace searches exclusively within academic literature, and with well-phrased queries, it can locate relevant studies.

Thesis Assignment and Consultations

Before you begin any extensive research or writing, you must clearly understand your thesis's objectives and methodology. As part of your studies, you must register your thesis during the winter semester of your 2nd year of bachelor's studies, or the 1st year of your follow-up master's program. This requires an in-person consultation, where you should come with an interesting idea and demonstrate that you are genuinely interested in the topic and have already done some preliminary research. During the first meeting, we will agree on the basic outline of your topic and enter the assignment into the UIS system or alternatively decide that our cooperation wouldn't be a good fit, and you should seek a different supervisor.

Entering the assignment into UIS is a formality to ensure your supervisor counts on you and that the study department knows you are fulfilling your responsibilities. The department head and the faculty dean must approve the final assignment. It must be approved before Christmas, so we will handle this in late November or early December. However, by that point, your thesis results should already be completed.

From the moment your topic is registered in UIS, you have over a year to develop an exemplary final thesis that brings new scientific knowledge in a correct and practically helpful form. A common mistake is that students postpone work, planning to start again in the following winter semester. In that case, you won't earn credit and won't be able to submit your thesis.

You will receive three credits: the first for the assignment (i.e., the basic outline), and two more for demonstrating progress in achieving agreed-upon results. The thesis is usually submitted in March, and the time between Christmas and the deadline is used for finalizing results, formatting, and typesetting. This means you have one summer semester (credit), the summer holiday, and the following winter semester (credit) to prepare a nearly final version of your thesis.

To do this successfully, continuous consultation is essential. In the initial phase (summer semester and summer holidays), one consultation every 1–2 months is usually sufficient. In the final phase (winter semester), you must consult once every 1–2 weeks.

In order to consult effectively, you must be actively studying the topic and ideally already working on your data. You should come to each consultation prepared, with a clear plan for the next steps, including your research questions and uncertainties.

Before each scheduled consultation (i.e. one that appears in everyone's calendar), you must send the version of your thesis you wish to discuss. Send the thesis as a live document link (e.g. via OneDrive or Google Drive)—do not send it as an attachment. I must have the ability to edit or review the document.

Reading your work and preparing feedback takes 1–2 weeks, so it is essential that you send your thesis well in advance. Mistakes must not accumulate. If you receive a comment about a systematic issue (e.g. incorrect citation format, inappropriate methodological step), that mistake must not appear in the next version.

You must also address all comments and recommendations I provide. Only those comments requiring further discussion may remain unresolved. If a corrected mistake reappears, I will not provide further feedback.

All communication with your supervisor must be conducted exclusively via your university email.

Reviews and Defence

At the defence (typically held in May), your thesis will be evaluated through two official reviews—one from your supervisor and one from your opponent.

Your supervisor knows you, has consulted with you, and has observed the gradual development of your thesis. Their final assessment is expected to be objective. The supervisor evaluates the results and methodology, aspects like your collaboration with the department, and the frequency and quality of consultations. Therefore, their review reflects your overall approach to the thesis, from both a positive and, if necessary, a critical perspective.

Your opponent typically does not know you personally and is unfamiliar with the development process. They only see the final submitted version of your work. As a result, the opponent will focus more heavily on your chosen methods, data evaluation, results presentation, and discussion. They will also assess your ability to write a proper literature review and your overall impression and formal requirements. That's why it's important not to neglect any aspect of your thesis.

The opponent will also prepare at least two questions related to your methodology and results. You must be well prepared to answer these questions during the defence. The defence is public (though it is not part of the state final exams—SZZ). While general public attendance is not expected, the supervisor, opponent, and any member of the committee (and even members of the public) may attend and ask additional questions. You will first be given the opportunity to present your thesis. It is expected that you will use MS PowerPoint or PDF for your presentation. If you intend to use alternative software (e.g., LibreOffice), you are strongly advised to export your presentation to PDF format.

The presentation should last 7–10 minutes, according to the requirements of your department or study office. Use this time wisely. While the committee has access to your thesis and the reviews, they likely have not read your thesis in detail. The reviews will be read aloud after your presentation. The goal of the presentation is to capture the committee's interest and explain what you've been working on for the past year and a half—and to do so quickly. That is not an easy task.

Avoid slides filled with text. Whole paragraphs—or even complete sentences—are not acceptable. Use bullet points or short phrases, ideally supported by images, charts, or figures. Each slide should have something that catches the audience's attention—whether it's a graphic, a data point, or a brief text highlight.

The key is to be able to speak about the topic without reading directly from the slides. Design your slides so that even under stress, you will know exactly what to say. The presentation should help you stay on track with your storyline and serve as a visual aid to help the audience better understand your narrative.

If you are nervous, practice your presentation out loud at home and time yourself. In reality, the duration will likely be different from what you expect. It's common to be given a strict time limit. If you exceed it and fail to reach your conclusion, the committee chair may stop you, and the lack of closure may raise doubts or lead to additional questions from the committee.

Good luck.
Jan Komárek