ROAD MAP for MASTER THESIS

Chair for Underground Mining Methods

Institute of Mining and Specialised Civil Engineering

TU Bergakademie Freiberg

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1 Introduction

This document serves as a comprehensive guide for all Master's students preparing to write their Master's thesis. It outlines the key steps and requirements involved in the thesis process, from initial planning to final submission and defense. Students are strongly encouraged to read this guide carefully and follow the instructions provided. Doing so will help ensure a smooth writing process and contribute to a successful outcome.
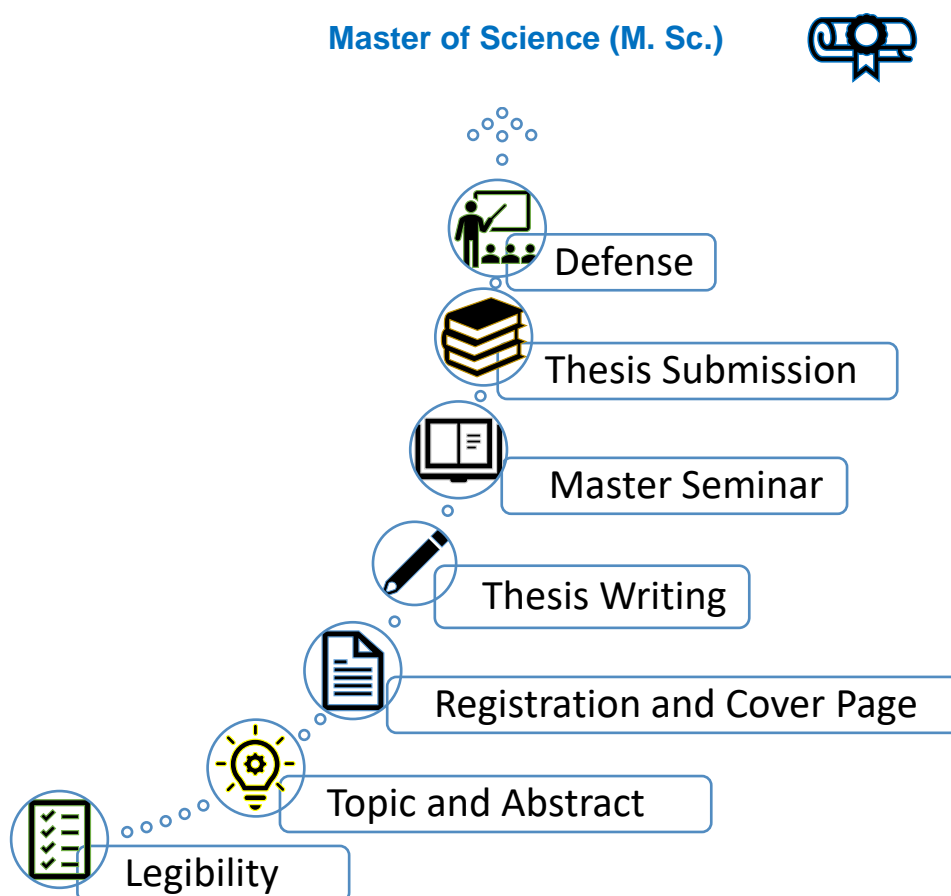
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Legibility

Figure 1: General approach to write a master thesis

2 Legibility to start writing the thesis

📌 Legibility

Contact the student office to confirm that you meet all academic requirements. You must have [1]:

- ☑ Completed all compulsory modules from the 1st and 2nd semesters
- ☑ Achieved the required number of credit points (ECTS), 60 ECTS for MORE and for AMRD [2]

  *Failure to meet these requirements may result in **delays** or **denial of thesis registration**.*

Student offices contact: https://tu-freiberg.de/en/study/service-and-counselling/student-office;

Study programs of Faculty 3: Geosciences, Geotechnics, and Mining

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Figure 2: Student Office Contact

3   Topic coordination with supervisors

📌 Topic and Abstract

3.1   Topic

In coordination with a professor a topic will be assigned to you that aligns with your current study program. Your Master thesis may be written

- At one of the **professorships** within your study program
- In collaboration with **research institutions**
- Or within **companies/industry** relevant to your field

Once the topic has been assigned, you will be assigned a supervisor (scientific assistant) to guide you through the process. More details are provided on the point 5.1 (page 6)

3.2   Abstract

📃 Abstract Guidelines

Before submitting your topic for approval, prepare a structured abstract that includes the following elements:

1. **Proposed Title**
    - A clear and concise working title that reflects your research focus.
2. **Background and Problem Statement**
    - Briefly describe the context of the topic and define the specific problem your thesis will address.
3. **Research Objectives and Goals**
    - Outline what you aim to achieve with your thesis (e.g., theoretical understanding, practical solution, case study, evaluation).
4. **Methodology**
    - Explain the approach and methods you plan to use (e.g., qualitative/quantitative research, simulations, data analysis, experiments, surveys).
5. **Expected Outcomes**
    - Describe the anticipated results or contributions of your thesis to the field of study.

✉️ **Send your structured abstract** to your intended **supervisor at the University** and **schedule a meeting** to discuss and refine the topic. If the thesis is conducted in **collaboration with research institutions or companies**, be sure to **also contact the supervisor within the external institution** to discuss the topic, ensure feasibility, and **align expectations**.

4 Officially begin to write your thesis

📌 Registration and Cover Page

After receiving approval from the **professorship**—and, if applicable, the **research institution** or **company**—for your chosen topic, proceed with the following step:

- **Registration**
    - o Contact the student office to officially register your thesis topic.
- **Cover Page**
    - o Once your topic is registered, the **official cover page** of your thesis will be created. This document includes the **exact submission deadline (**for Sustainable Mining and Remediation Management (MORE) 4 months [2] and for Advanced Mineral Resources Development (AMR) 6 months [3]) and marks the start of the official writing period. As soon as the cover page is ready, you will be **notified to pick it up** at the **secretary's office** of the professorship where you are writing the thesis only then you can start to work on the thesis.

5 Writing the thesis

📌 Write

At the beginning writing you thesis elaborate a detailed time plan for the thesis process. This roadmap should outline the major stages of the work, including:

- Initial Research
- Experimental design and execution (if applicable)
- Data analysis and interpretation
- Draft revisions based on feedback
- Language and grammar corrections
- Final formatting, printing, and submission

The roadmap must be discussed and agreed upon with the thesis supervisor early in the process to ensure mutual understanding and proper planning.

Use the **Report Writing Guide for Engineers** (https://eclass.duth.gr/modules/document/file.php/423702/%CE%A4%CE%95%CE%A7%CE%9D%CE%99%CE%9A%CE%9F%CE%A3%20%CE%9F%CE%94%CE%97%CE%93%CE%9F%CE%A3%204%20-%202024_ReportWritingGuide_eBook.pdf**)** to format the thesis.

5.1 Meetings with the supervisor

Maintain regular contact with their supervisor throughout the thesis period. It is recommended to schedule **one to two meetings per month**. Bear in mind that it is your responsibility as a student to arrange an appointment with the supervisor (not the professor). To make these meetings effective the students have to consider following:

- Preparation of a clear agenda and list of questions or discussion points in advance.
- The meetings are to address challenges, clarify expectations, and receive feedback on draft sections.
- During the meeting, the supervisor will not read the thesis, but will answer specific questions.

🔔 *Regular supervision is a key component of a successful thesis and is required for continuous assessment.*

5.2 Plagiarism and use of Artificial Intelligence (AI) Tools

Plagiarism is defined as using and presenting another's work (e.g., ideas, published and unpublished material, texts, graphics, data) as your own without the original author's consent or full acknowledgement by citation. This also includes material generated wholly or in part through the use of artificial intelligence. [4]

The **unauthorized use of AI tools** in any part of the thesis (including writing, coding, or data analysis) is strictly **forbidden**. If AI-generated content is used, it must be **clearly cited and documented (see point 5)**. [5]

The unacknowledged use of AI tools will be considered academic fraud. If a supervisor identifies AI-generated content that has not been properly cited, the student will **automatically fail the thesis**.

⚠️ Students are encouraged to discuss any intended use of AI tools with their supervisor in advance to ensure transparency and compliance.

5.3 Deadlines and Extensions

- The final thesis must be submitted by the official deadline communicated by the academic department.
- Requests for deadline extensions must be submitted **at least 3 weeks** before the deadline and include a **valid justification**. Extensions are not normally granted, except in cases of proven illness or unavoidable delays in laboratory processes, device unavailability, etc.
- Extensions are granted at the **discretion of the department and the thesis supervisor**.
- In exceptional cases, the submission deadline may be extended by **up to two months**, provided a justified request is submitted and approved. [2]

Failure to submit the thesis by the official deadline, without an approved extension, will result in automatic failure.

6   Thesis submission

📌 Submit

6.1   Use of AI

Submit **two or three bound copies** of the Master's thesis to the Student Office. Each copy must include a **CD or USB stick containing the PDF version** of the thesis as an attachment. Additionally, all relevant data—such as analytical raw data and model code—must be included in the thesis as an **appendix**. [2]

Upon submission, the candidate must provide a **written oath (see Example of declaration of independence/ oath [5]**) affirming that the thesis—**or, in the case of a group thesis, the appropriately labeled individual section**—was completed independently, and that no sources or aids were used other than those explicitly stated. [5]

If **artificial intelligence (AI) tools** were used during the preparation of the thesis, their use must be **clearly indicated and documented** in an appropriate section of the thesis.

Example of declaration of independence/ oath [5]

Declaration of independence

I hereby declare that I have written this thesis

Title of the thesis

myself and without unauthorised assistance from third parties and without the use of aids other than those specified or authorised.

The ideas taken directly or indirectly from external sources are labelled as such and are proven.

Variants with text modules for AI

Variant 1: Exclusion of AI Use: No AI-generated text passages or content were used in this work.

Variant 2: AI Use Not Requiring Identification: *I certify that I have not used any AI-based tools other than the following, which do not require explicit labeling according to university guidelines:*

- *Microsoft Word spell checker,*
- *General-purpose search engines such as Google or Bing,*
- *Duden Mentor.*

*Additionally, I have only used the following AI tool with **explicit written authorization** from the examiner:*

- *DeepL.*

I take full responsibility for the incorporation of any machine-generated passages used in this thesis and accept liability for any inaccuracies, distortions, incorrect references, data protection or copyright violations, and instances of plagiarism arising from such content. Furthermore, I affirm that my own creative contribution predominates throughout this work.

Option 4: AI Use Requiring Identification

I hereby declare that any content generated or assisted by AI tools has been clearly identified and labelled within this thesis. All such AI-based contributions are documented in the appendix, including the names of the tools used and the scope of their application. I confirm that the use of these tools complies with university regulations and has been approved by the examiner where necessary. I take full responsibility for the incorporation of any machine-generated passages used in this thesis and accept liability for any inaccuracies, distortions, incorrect references, data protection or copyright violations, and instances of plagiarism arising from such content. Furthermore, I affirm that my own creative contribution predominates throughout this work.

I declare that I have not submitted the attached work, either in identical or substantially similar form, for the purpose of obtaining any other academic degree, certificate, or qualification.

I am aware that any violation of the above statements may lead to consequences under university examination regulations, including the potential revocation of academic recognition.

Place, Date and Signature

6.2 Master Seminar

The Master's seminar (for MORE students) is conducted in parallel with the mater thesis phase. Before submitting the master's thesis—preferably **two months** after receiving the topic—a ten-page paper must be prepared based on the thesis subject. This paper may also be structured as a research article suitable for submission to an academic journal. The seminar paper is to be submitted to the second supervisor, after which preparations for the thesis defense may commence. Upon approval of the paper by the supervisor, a date for the defense

will be scheduled. The defense consists of a 20-minute oral presentation, followed by a discussion session with the audience. [6]

The grade is generated from the examination result(s) with the following weightings (w):

- Written paper: W1
- Oral presentation: W1

The final grade is therefore the average of the written paper and the oral presentation Passing the Master's seminar with at least 4.0 carries a total of 4 credit points (CP). [6]

Upon successful completion of the Master's seminar, a date for the Master's thesis defense will be scheduled.

7 Defense

📌 Defense

The Master's thesis must be defended in a colloquium. Eligibility for the defense requires that the written thesis receive a minimum grade of 4.0 (sufficient). The defense must be held within six weeks of the submission date. The **presentation** should have a duration of **20 minutes**, followed by a discussion period. [2]

8 Literaturverzeichnis

[1] TU BERGAKADEMIE FREIBERG: *Master Thesis - Information for MGWM/ MORE/ AMRD*. Unveröffentlicht, 2023

[2] TU BERGAKADEMIE FREIBERG: *Prüfungs- und Studienordnung für den Masterstudiengang Sustainable Mining and Remediation Management*. 2. November 2023

[3] TU BERGAKADEMIE FREIBERG: *Prüfungs- und Studienordnung für den Masterstudiengang Advanced Mineral Resources Development*. October 2023

[4] UNIVERSITY OF OXFORD: *Plagiarism*. URL https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism

[5] TU BERGAKADEMIE FREIBERG: *Leitfaden zum Umgang mit KI-Software*. Unveröffentlicht, 2024

[6] TU BERGAKADEMIE FREIBERG: *Master-Seminar Sustainable Mining and Remediation Management with Colloquium*. URL https://bildungsportal.sachsen.de/opal/auth/RepositoryEntry/21668233218/CourseNode/1691721097707841012 – Überprüfungsdatum 2025-06-27