

# THESIS GUIDELINE

FOR THE MASTER'S DEGREE PROGRAMMES  
"ENERGY INFORMATICS" AND "MOBILE COMPUTING"

UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA  
SCHOOL OF INFORMATICS, COMMUNICATIONS AND MEDIA  
CAMPUS HAGENBERG  
DEPARTMENT OF SMART AND INTERCONNECTED LIVING

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## 1. General Remarks

*The Master's Thesis is a scientific paper that substantiates a specific point of view as a result of original research that is conducted by students during their graduate study. It should present an original argument that is carefully documented from primary and/or secondary sources. The thesis must have substantial research and realization components and it must be written under the guidance of an advisor. As the final element in the master's degree, the Master's Thesis gives the student an opportunity to demonstrate expertise in the chosen research area.*

## 2. Required Forms

### 2.1 List of Forms

The following forms are mandatory formal requirements of the Master's Thesis Process (MTP) of the Department of Smart and Interconnected Living, being a part of the University of Applied Sciences Upper Austria (UAS):

#### **Form A: Proposal of Topic**

Form A needs to be provided to the Master's Thesis Committee (MTC), accompanied by a formless abstract document. Students have to convince the MTC of the value and interest of the intended project. Form A has to be signed by student and by the proposed advisor, and to be approved by the Head of Studies on behalf of the MTC. After the approval of the topic, students can officially start with the practical part of their Master's Thesis (see Section 3.2). In case of a change of the topic, the process has to be repeated for the new topic.

**If students continue their topics from the respective preceding semester, a submission of Form A in the current semester can be omitted.**

#### **Attention:**

**Not submitting a valid Form A in due time, or submitting a Form A that can not be accepted by the MTC, will lead to a topic allocation by the MTC not considering the respective student's preferences.**

#### **Form B: Supervision Agreement**

The supervision agreement is a contract that defines the cooperation between the advisor and the student. Once an advisor has accepted to advise a thesis, student and advisor have to agree on a timetable for submitting deliverables. The signing of this contract by both the student and the advisor(s) is the official starting point for the Master's Thesis (see Section 3.3).

#### **Attention:**

**Not submitting a valid Form B in due time will lead to a delayed allocation of a thesis advisor, which again may lead to a lack of feedback for the work on the thesis.**

#### **Form C: Final Submission**

For the submission process, Form C has to be filled in, which implies all the details of the Master's Thesis, including the right of online publication. Furthermore, Form C is the official application for the final degree examination. With this form, the examiners will be defined.

Form C must be submitted **at latest with the scheduled deadline for the final submission** of the Master's Thesis for this appointment.

The form has to be signed by the student. Furthermore, the Head of Studies must approve the examination agreement explicitly on behalf of the MTC (see Section 3.5). After submission, the advisor has to fill in the grading and to sign this form (see Subsection 3.4.3).

**Attention:**

**Not submitting a valid Form C in due time will lead to a non-approbation of the thesis. As a consequence, a missing Form C will lead to a negative grading of the thesis and thus to a loss of an attempt.**

**Form S: Application for Suspension**

After approbation, the Master's Thesis will usually be published in the university's library. However, students may apply for a time-limited suspension of the publication of the thesis (for 3 or 5 years), if they can name relevant reasons for that. Acceptable reasons comprise non-disclosure agreements with companies (if the thesis is conducted as a company thesis) or business interests (if the thesis prototype shall be developed to a product).

**Form Z: Application for Extension**

This optional form may be filled in, if students want to take the second submission date. This has to be done **at latest with the first scheduled deadline for the final submission** of the Master's Thesis. This form has to be signed by the student, and has to be approved by the advisor and the Head of Studies.

**Attention:**

**Not submitting a valid Form Z in due time, while also not submitting the thesis at the first possible due date, will lead to a negative grading of the thesis and thus to a loss of an attempt.**

## 2.2 Handling of Forms

Students are responsible for the correct handling of these forms. They are encouraged to take their time and to double-check the information they provide. Errors could delay processing, or even lead to a stop of the Master's Thesis Process. The correct handling of the forms comprises following duties:

- Students have to **fill in** all the forms **correctly** and in given **due time** (these due times can be taken from the **corresponding courses** on the **e-learning platform**).
- Students have to **sign** the forms. This may be done electronically (by using an electronic image of the signature, which has to be placed in the designated field, or by using electronic signatures) or by paper (printing, signing manually, and scanning the respective forms).

- Students have to **collect additional signatures** without being reminded, as far as required by the respective forms (e.g., the proposed **advisor**). Again, this may be done electronically or manually.
- Finally, students have to **upload all forms** containing all required signatures to the upload sections of the **corresponding courses** on the **e-learning platform**.

The ENI Master's Thesis Process comprises following **courses** of the ENI **curriculum**:

- Master's Thesis Project (ENI602)
- Master's Thesis Seminar (ENI603)
- Master's Thesis (ENI604)

The MCM Master's Thesis Process comprises following **courses** of the MCM **curriculum**:

- Project 2 (2\_MC513)
- Master's Thesis Project (2\_MC602)
- Master's Thesis Seminar (2\_MC603)
- Master's Thesis (2\_MC604)

Each of these curricular courses has a **corresponding e-learning course** on the e-learning platform. All of these e-learning courses contain appropriate download and upload sections. In the **download sections**, information like this guideline can be found, as well as **templates** (e.g., for all required forms). In the **upload sections**, the **completed forms** (as described above) and **other required documents** (as described in the following sections) have to be **uploaded**.

**Attention:**

**For the ENI curricular course Master's Thesis Project (ENI602), respectively the MCM curricular courses Project 2 (2\_MC513) and Master's Thesis Project (2\_MC602) also the regulations stated in the Project Guideline have to be considered.**

The forms and other deliverables required by the ENI curricular course Master's Thesis Seminar (ENI603), respectively the MCM curricular course Master's Thesis Seminar (2\_MC603), are not part of the mentioned guidelines. The regulations for these courses are stated in the **corresponding e-learning courses on the e-learning platform**.

### 3. Master's Thesis Process

#### 3.1 Overview

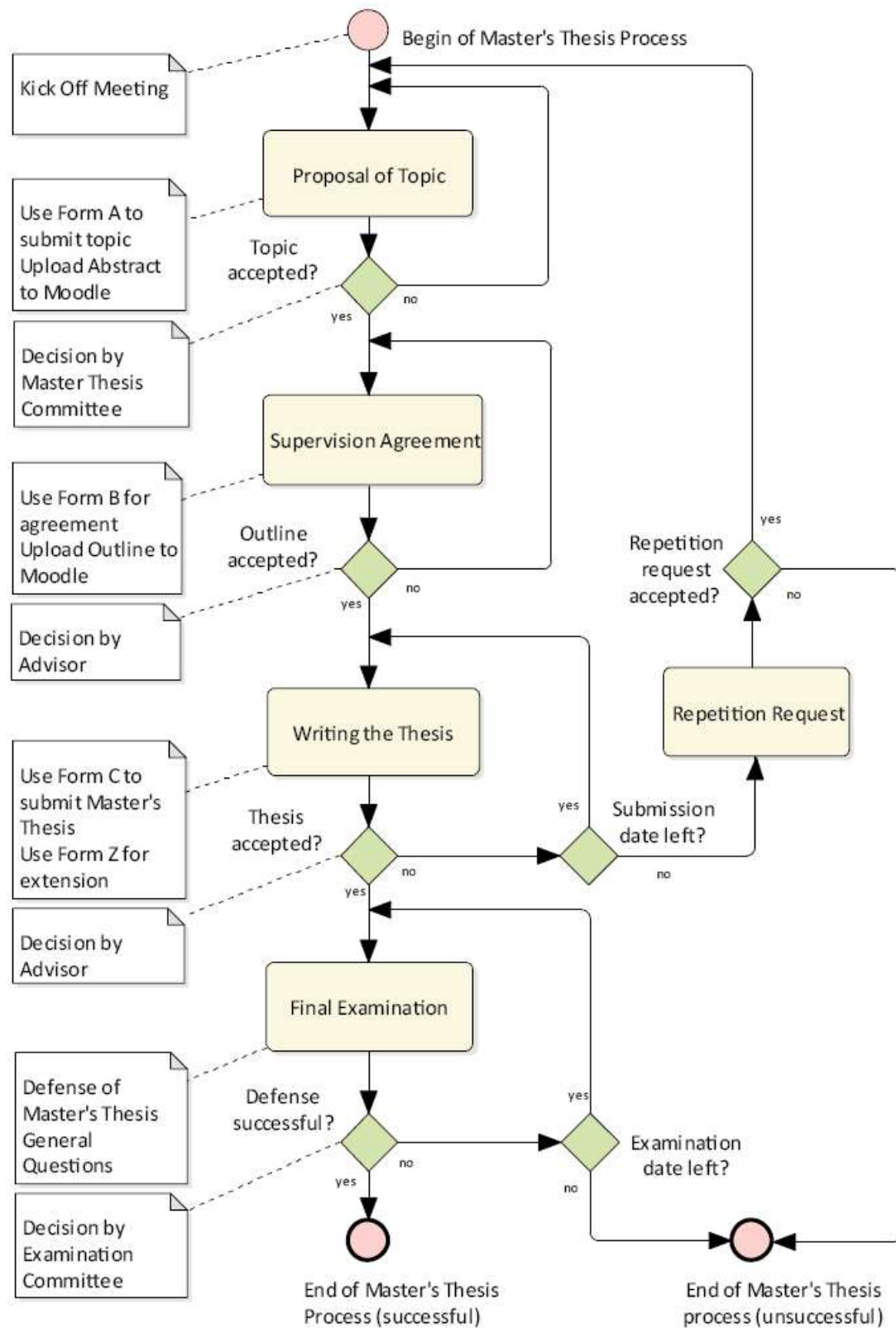


Figure 1: Structure of MTP

### 3.2 Proposal of Topic

Students are expected to specify the topic of their Master's Thesis autonomously. However, this may be based on suggestions from professors or from companies they have already worked with. In case of collisions, the suggesting professor will take the choice.

The Master's Thesis must include a practical part; usually that is implemented in the Project Module in the 2<sup>nd</sup> semester (MCM only) and in the Master's Thesis Project during the 3<sup>rd</sup> semester (ENI and MCM). A change of topic is possible, but requires the approval of the MTC.

To submit the selected topic, students have to fill in Form A. Additionally, they have to prepare a formless "Project Abstract" document (1 page of content). The abstract shall answer the main questions on the topic, as follows:

- Motivation: What is the main idea behind this topic? How relevant is this topic for the professional practice?
- Realization: Which functionalities shall the intended artefact provide, and how shall the artefact be used for gaining results, which can be used for further work?

A template for the abstract can be found on the e-learning platform. Students have to convert the abstract to PDF. Furthermore, they have to **prepare the fully signed** Form A (see Section 2). Then, **both documents have to be uploaded** to the e-learning platform. The abstract of the topic and Form A have to be approved by the Head of Studies on behalf of the MTC.

As soon as a topic is approved, the MTC allocates the advisor. This will be announced on the e-learning platform as well as by the department office in timely manner. Students' preferences are taken into account as far as possible. With this announcement, the project officially starts.

If a student does not submit a valid topic proposal in due time, this leads to the allocation of a topic by the MTC without further consultation of the student.

### 3.3 Supervision Agreement

The Master's Thesis will be guided by one of the department's lecturers. The advisor supports the student in specifying the topic, as well as in shaping, refining and directing the student's Master's Thesis. The advisor also monitors the progress and is the student's contact person in case of problems. The advisor is also doing the first evaluation of the Master's Thesis.

If the Master's Thesis is written within an organization, an additional company advisor with designated professional competence must be available in the organization for providing additional information on the practical side of the Master's Thesis.

Internal (UAS staff) advisor and student must agree on the Supervision Agreement (Form B). This includes a timetable for the submission of deliverables (e.g., draft versions of chapters, implemented functionalities, etc.). This agreement is a contract that has to be signed from both sides.

If the Master's Thesis is written within an organization, this has to be announced in Form B. The external (company) advisor has to notice and sign the declaration, too.



Appointments are obligatory for the advisor as for the student. If the student does not satisfy the agreement, the advisor is allowed to reline the supervision of the student. If the advisor is not following the agreement, the student has to inform the MTP Coordinator.

For the supervision agreement, students have to fill in Form B. Besides Form B, they have to prepare a formless “Thesis Outline” document (8 - 10 pages of content). The outline has to contain the following issues:

- Overall Goal, Motivation, and Research Questions
- State of the Art and Related Work
- Approach and Methodology
- Practical Realization
- Planned Structure of the Thesis (including page numbers)
- Planned Schedule and Deliverables
- Bibliography

A template for the outline can be found on the e-learning platform. Students have to convert the outline to PDF. Furthermore, they have to **prepare the fully signed Form B** (cf. section 2). Then, **both documents have to be uploaded** to the e-learning platform. The official starting point of the Master’s Thesis is set, after the advisor has agreed on the topic and has approved Form B as well as the outline.

## 3.4 Writing the Thesis

### 3.4.1 Formal Issues

The volume of the Master’s Thesis should be between 60 pages respectively 20.000 words (minimum) and 90 pages respectively 30.000 words (maximum), excluding preliminaries and appendices. The thesis has to be written by using LaTeX. A link to the latest version of the LaTeX template is provided in the e-learning platform. Style information (character size, line spacing) has to be left unchanged. Dr. Burger’s guidelines (related to LaTeX) have to be taken into account, before starting writing the Master’s Thesis.

The intellectual property of the Master’s Thesis belongs exclusively to the author, except there is an explicit agreement that defines a different arrangement (e.g., the thesis is written on behalf of a company).

The Master’s Thesis may be written either in German or in English. If the thesis is written in German, the title on the cover page has to be provided in both languages, while the rest of the cover page is provided in German only (e.g., “eingereicht von” instead of “submitted by”).

A progress presentation is to be held once at the Master’s Thesis Seminar course; feedback from other candidates and the MTP Coordinator is given subsequently.

### 3.4.2 Preliminary Submission

The preliminary version of the thesis **has to be submitted to the e-learning platform as PDF file**. The submitted version has to be completed and must have a clean image in order to convey an overall impression of the work.

The advisor will review and evaluate the preliminary version in timely manner before returning it to the student with appropriate feedback. The advisor's comments have to be incorporated before submitting the final version. A second appraisal concerning the layout may be done by a further person (copy editor).

### 3.4.3 Final Submission

According to the requirements of the UAS, one hard copy of the Master's Thesis will be printed and bound at a bookbinder on behalf of the UAS. Students are responsible for **submitting** the correct **printable PDF version** of their thesis via the e-learning platform.

Candidates have to sign the affidavit on this hard copy during their final examination. This copy will be submitted to the UAS library. For the printing and binding service, a **binding fee** has to be paid; this fee is **to be transferred** in advance to:

- Account Name: FH OÖ Studienbetriebs GmbH
- IBAN: AT33 3446 0000 0521 7526
- Swift/BIC: RZOO AT2L460
- Amount: 34 €
- Purpose: Binding, <student identification number>, <student surname>

For the final submission, candidates **have to submit the following via the e-learning platform**:

1. The final version of the Master's Thesis as PDF file
2. The completed and fully signed Final Submission form (Form C)
3. A transfer confirmation for the binding fee

Additionally, candidates **have to submit the following via the version-control system repository** used in the Master's Thesis project:

4. LaTeX sources, used materials of the practical part (e.g., data, executable code, commented source code, test reports), online sources, etc. (details have to be checked with the advisor)

The non-disclosure of a Master's Thesis can be requested using Form S ("Application for Suspension"). A blocked thesis is only accessible to the advisor and the MTC. The final examination will take place without additional audience. The Master's Thesis will stay blocked until the end of the blocking period (maximum 5 years).

Students who want to **omit** the first possible submission appointment ("early submission") have to document this by **submitting Form Z** until the **due date for the final submission**.

They then have to take the second possible submission date ("late submission"); otherwise, if **no submission** is done at **the late submission**, this will automatically lead to **negative grading** and thus to a loss of attempts.

### 3.4.4 Approval and Grading

The advisor has to evaluate the thesis and, if the quality is sufficient, to approve it. A second advisor may be consulted if required. The MTC is allowed to enforce additional reviews.

At latest one week before the final defence, the results of the approval have to be fixed. The thesis evaluation guidelines contain:

1. Content-related aspects:

- Elaboration of problem / issue / objective / hypothesis
- Relevance and aim
- Treatment of topic
- Summary and outlook
- Originality (content)

2. Methodological aspects:

- Specifying and justifying methodological approach
- Nature and manner of processing of knowledge
- Analysis and presentation of results
- Quality, variety and relevance of literature
- Logical sequence / coherence
- Methodological originality

3. Formal aspects:

- Structure
- Writing style
- Layout
- Citations / references / bibliography

The grades are excellent (1), good (2), satisfactory (3), sufficient (4), and insufficient (5). The grading will be announced as part of the final examination.

Each Master's Thesis is screened on plagiarism. Any advisor who detects or suspects plagiarism in a Master's Thesis should act quickly to gather evidence. When the evidence seems to support plagiarism, the advisor must notify the student as soon as possible about the concerns. Thereby, the student has the possibility to correct the thesis.

Special care is required when apparent plagiarism is discovered after a Master's Thesis has been submitted for final examination or after the student's program has been completed. In such cases, the title has to be renounced.

### 3.5 Final Examination

Before the final defence can be held, the following points are required:

- All **required curricular courses** of all four semesters have to be **graded positively**.
- The **Master's Thesis and Form C** must be **submitted and approved**.

For the final examination, two examiners have to be determined. The first examiner is the main advisor; the second examiner can be suggested by the candidate out of the current examination board. The two examiners have to be two different persons. The student's choice is taken into account as far as possible; however, there is no guarantee that the allocated second examiner is identical with the

requested one. The desired allocation of examiners has to be documented in Form C, which has to be submitted along with the final submission of the Master's Thesis and has to be confirmed by the Head of Studies on behalf of the MTC.

The examination dates are allocated by the UAS; desired dates cannot be considered (see chapter 4). The exact allocation of the examination date can be inquired by the student at the department office. The final examination includes the presentation of the Master's Thesis (about 14 min, excluding questions on the presentation), the questions of the first examiner (about 15 min) and the questions of the second examiner (about 15 min). Projector, flipchart and whiteboard are provided. If any other tools are needed, students have to contact the department office at latest one week in advance of the examination date. For distance examinations, the respective regulations of the department are applicable.

Examination committee members review the examination afterwards and agree on the score. Following grades are possible: Passed with distinction, passed with merit, passed, or failed. In case of failing, the examination can be retried twice. On the final examination certificate, only the grades for the presentation as well as for the two parts of the examination are taken into account.

## 4. Timeline

The important due dates for submission of the Master's Thesis are shown at the e-learning platform. The final examinations take place after the submission. The examination dates are also shown at the e-learning platform. Students may choose between an early and a late submission due date for uploading the thesis.

The early submission due date is taken as default. When choosing the late submission due date, students have to apply for deadline extension (see Form Z). Such an application for deadline extension must be fully signed and submitted to the e-learning platform **at latest with the scheduled due date for the final submission** of the Master's Thesis.

The exact dates of the timeline can be found on the e-learning platform. A rough schedule is depicted in Table 1 (for ENI) and Table 2 (for MCM).

Table 1: Task Allocation and Due Times of ENI

No.	Task description	Responsible	Due date
01	MTP Kick Off presentation	Coordinator	Sep (Sem. 2)
02	Definition and submission of Form A and Abstract	Student	Nov (Sem. 3)
03	Decision about topics and allocation of advisors	MTC	Feb (Sem. 3)
04	Submission of practical part (MT Project)	Student	Mar (Sem. 4)
05	Submission of Form B and Outline	Student	Mar (Sem. 4)
06	Presentation of MT progress (MT Seminar)	Student	Mar / May (Sem. 4)
07	Submission of preliminary version of MT	Student	May / Aug (Sem. 4)
08	Submission of Form C and final version of MT <sup>1</sup>	Student	Jun / Sep (Sem. 4)
09	Grading of final version	Advisor	Jun / Sep (Sem. 4)
10	Final examination	Commission	Jul / Sep (Sem. 4)
11	Application for diploma delivery	Student	Jul / Sep (Sem. 4)
12	Graduation ceremony (optional)	UAS	Oct (after study)

<sup>1</sup> For the early submission due date, Form Z may be submitted instead

Table 2: Task Allocation and Due Times of MCM

No.	Task description	Responsible	Due date
01	Preparation of topics	Student	Feb (Sem. 1)
02	Definition and submission of Form A and abstract	Student	Mar (Sem. 2)
03	Decision about topics and allocation of advisors	MTC	Mar (Sem. 2)
04	Presentation of Project 2	Student	Jul (Sem. 2)
05	Presentation of MT Project	Student	Feb (Sem. 3)
06	Submission of Form B and outline	Student	Mar (Sem. 3)
07	Submission of preliminary version of MT	Student	May / Aug (Sem. 4)
08	Submission of Form C and final version of MT <sup>2</sup>	Student	Jun / Sep (Sem. 4)
09	Grading of final version	Advisor	Jun / Sep (Sem. 4)
10	Final examination	Commission	Jul / Sep (Sem. 4)
11	Application for diploma delivery	Student	Jul / Sep (Sem. 4)
12	Graduation ceremony (optional)	UAS	Oct (after study)

The colours correspond to the phases of the MTP (proposal of topic, supervision agreement, writing the thesis, and final examination, see Section 3.1). The due dates are shown for first and second appointment only – later appointments can be derived from the e-learning platform.

If the Master's Thesis has not been submitted at the set time, it will not be approved, i.e., the student will receive a failing grade. An unapproved Master's Thesis can be resubmitted two times within a determined deadline. Students who have received three failing grades, have the right to apply for repetition of the second master study year, if they have not already repeated. In case of repetition, the whole MTP has to be started from the beginning.

<sup>2</sup> For the early submission due date, Form Z may be submitted instead

## 5. Contact Persons

### ENI AND MCM HEAD OF STUDIES

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### ENI MTP COORDINATOR AND ENI PROJECT COORDINATOR

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### ENI AND MCM HARDWARE COORDINATORS

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