TALLINN UNIVERSITY OF TECHNOLOGY
School of Information Technologies
Department of Software Science

Master's Thesis Handbook

e-Governance Technologies and Services International Master's curriculum

Tallinn
2017

Table of Content

1. The general purpose of the Handbook

The Master's thesis is an academic research paper and an essential piece of evidence demonstrating the student's ability to apply the knowledge acquired during the programme within the context of a research project. The thesis stands as a representative sample of the professional quality of the student, the supervisor, and the thesis committee together with the programme, the department, and the university. The purpose of a Master's thesis is to investigate and solve important problems in the selected area at a level worthy of a Master's degree.

The overall purpose of the handbook is to help students with choosing a topic and a supervisor, formatting the thesis and preparing for the defending of the thesis project in the third semester and the thesis in the fourth semester. The requirements provided in the handbook have been coordinated with the School of Information Technology and the Department of Software Science and comply with the International Master's e-Governance Technologies and Services curriculum.

2. Timeline

To allow students sufficient time to prepare for the thesis project and write the final thesis, topics need to be chosen in the beginning of the second year.

March	Seminar I: Introduction to Thesis process This one-hour introduction seminar will give students an overview of the thesis writing process and requirements.
Apr - May	Seminar II: Introduction to Thesis topics (Electronically in Moodle)
	Seminar III: Practical seminar on information sources and guidelines for referencing
	Seminar IV: Seminar on how to conduct a research (Electronically in Moodle)
September	Seminar V: Thesis topic pitching
	Seminar VI: Seminar on research methods
October	Seminar VII: Thesis Research Proposal
	Supervisors are assigned and confirmed with the written Supervisor's agreement
January-March	Seminar VIII: Thesis progress seminars (detailed information in Moodle)
June	Master's theses defence

NB! The exact dates will be published in the beginning of each school year. The TUT academic calendar contains more information and details about the important dates.

3. Master's thesis

Master's thesis is an individually written academic scientific research paper with the goal to investigate and solve a problem relevant in the chosen field that is in accordance with the requirements set for Master's level studies. A thesis focuses on presenting a research problem through a theoretical approach, literature review and subject matter by synthesising scientific methods of analysis and proposing new practical solutions. Master's thesis includes components of empirical research that can be analysed both qualitatively and quantitatively. Students may also want to conduct active fieldwork and give a more practical orientation to their research. This approach includes but is not limited to working directly in an organisation to conduct research. The results of practical theses include real-life applications, projects, prototypes, and working solutions - theoretical frameworks that can be implemented in real life.

3.1 Choosing a topic

The topic of the Master's thesis needs to be relevant and actual, grown out from practical or research needs, and take into consideration the development perspectives of science and technology. Additionally, the thesis needs to comply with the current handbook and requirements set by the Tallinn University of Technology.

Students may choose their own topic based on their research and personal interests but the topics need to be relevant to the specific field that is set by the current Master's programme. Additionally, different organisations from all sectors together with the lecturers and staff at TUT will propose a number of topics to choose from. The list of topics can be consulted at the topics' seminar in and at the Department of Software Science later on.

3.2 Choosing a supervisor

The mission of the supervisor is to guide the student throughout the planning and conducting of research and advise them in solving substantial problems. It needs to be kept in mind though that the supervisor does not help the student with any grammatical editing or general editing of the thesis.

An academic supervisor is a PhD student, a lecturer, a professor, or research staff at TUT who has a qualification corresponding to the level of a Master's degree or higher. **Students need to choose their supervisor and go to them with an initial idea or plan for the thesis.** In addition

to an academic supervisor students may have a conceptual (guide within the specific topic) supervisor.

The main supervisor has to be from the School of Information Technology!

The role of the supervisor(s) is to:

1. Guide the student through the planning of the thesis.
2. Help specify and modify the topic of the thesis.
3. Help identify the main problem of the thesis.
4. Advise in solving substantial problems and conducting the research.
5. Make sure that the thesis corresponds with the requirements (content, level of complexity, format) set by this handbook and the TUT.
6. Supervisors do not check students' spelling and grammar!

The role of the student is to:

1. Coordinate the provisional plan of the thesis with the supervisor before writing the thesis.
2. Coordinate and analyse research design, potential theoretical frameworks, and methodologies with the supervisor in the planning of the thesis.
3. Students need to follow the agreed timetable. This needs to be coordinated with the supervisor in the beginning of the planning of the thesis.
4. Student needs to follow the guidelines of the master's thesis handbook.
5. Student should use spell-check and grammar-check throughout the thesis and not expect the supervisor to correct their typos and language.

3.3 Research methodology

One of the key factors in writing a thesis that successfully presents your research is the research methodology. This is the section of your thesis that explains how you carried out your research, where your data comes from, what sort of data gathering techniques you used, and so forth. Generally, someone reading your methodology should have enough information to be able to create methods very similar to the ones you used to obtain your data. However, you do not have

to include any questionnaires, reviews, interviews, etc. This section is primarily for explaining why you chose these particular techniques to gather your data.

To write a research methodology chapter you need to consider the following:

1. Present the subject that you aim to examine
2. Explain the way you chose to go about approaching your research (case study research, action design research, design science among others!)
3. Choose between different types of research (Primary [interviews, surveys, and other first-hand accounts] and secondary [books, articles, etc.] research, qualitative [interviews, observation, and discussion] and quantitative [statistics, surveys, experiments, and mathematical modelling] research analysis), etc.
4. NB! Students should choose a method and an appropriate domain that is relevant to the field and topic of the research.
5. How did the methodology serve your purposes
6. How were the chosen methodology more suitable than the other available methodologies

Remember, your thesis supervisor is there to help should you get stuck with choosing your research methodology!

Please consult:

Oates, Briony J. (2005) Researching Information Systems and Computing / University of Teesside, Middlesborough.

For more information: http://www.uk.sagepub.com/textbooks/Book226898

4. Requirements for the Master's thesis

Formatting

All Master's theses need to comply the following requirements for formatting:

1. Text: Times New Roman, 12p, 1,5 spacing, justified positioning, numbered pages
2. Margins: Top and bottom 20mm, left 30mm, and right 15mm
3. Number of words: 20 000-25 000
4. At least 40 references, No Wikipedia, focus on academic resources!
5. You may choose your referencing style, but all references should be arranged in a consistent manner (Harvard, APA, etc.)

See **Appendices 4, 5** and **6** for referencing guidelines (separate documents both in Moodle and egov.ee).

Structure of the work

1. Title page
2. Author's declaration
3. Abstract
4. Abbreviations and concepts
5. List of tables
6. List of figures
7. Table of contents
8. Introduction and motivation (What is the motivation and the purpose of the work)
9. Structured content (includes but is not limited to: State of Art/Theoretical background, Literature overview, Research questions, Research methodology, Results, Discussion)
10. Conclusions
11. Bibliography
12. Appendices

Please use this structure as a template for your Master's Thesis and customise your Table of contents according to your own research.

5. Guidelines for the Thesis Research Proposal

To qualify for the final Master's thesis defence in the end of second year all students must present and pass the Thesis Research Proposal in the third semester.

The Research Proposal is an overview of student's view of the topic, its main research questions and problems, hypotheses, examples of literature, research methods, and an approach to answering to the presented research questions.

Each section should describe very briefly students' vision and plan to carry out their Master's thesis research.

The requirements for the thesis research proposal are as follows:

Length:

      Strictly 800-1000 words

Must include:

1. Title, Name, Supervisor
2. The relevance of the topic
3. Central problem with the topic
4. Main research question(s)
5. What theoretical approaches will be used
6. Items covered in literature review
7. What research methods will be used?

Please use the provided template for the Thesis Research Proposal.

NB! Please note that you have to present a signed supervisor's agreement on the same date as the Thesis Research Proposal.

6. Defending the thesis

The defending of the thesis is carried out at a curriculum-specific defence committee. The committee usually includes the chair of the defence committee, lecturers and researchers from TUT and external committee members. The exact line-up of the committee can change. Master's defences are generally public if not stated otherwise. First year students are encouraged to participate!

Students need to present the following documents to the committee:

1. 2 paper copies of the Master's thesis and 1 PDF
2. The defence application in Study System OIS confirmed by the Office of the Dean
3. The thesis review (available to student 2 days prior to the defence)
4. Supervisor's opinion

NB! Any changes and/or additional documents will be communicated with you through Moodle and egov.ee

7. Reviewing the thesis

All theses that are to be defended at the defence committee need to be reviewed by neutral readers. All reviews are assigned and coordinated by the Institute. All reviewers should consult the reviewing guidelines in **Appendix 1**.

Appendix 1.

<u>Suggestions for thesis reviewers</u>

- Does the essence of the thesis correspond to the topic of the thesis?
- Does the introduction include the necessary components (the goal of the thesis, research objective, research questions, used research methodology, used resources, novelty of the research, practicality of the research, introduction of the structure of the work)
- Have the research questions been formulated clearly?
- Have the goals of the work been met and the research questions been answered?
- Is the thesis divided into sections and subsections in an optimal and logical manner?
- Has the methodology and empirical analysis explained in a sufficient manner?
- Do all the sections of the thesis form a coherent work?
- Does the work include a literature review (previously published work on the topic)?
- Has the student analysed and worked through the gathered material in a sufficient manner?
- Has the student made a sufficient number of conclusions and given suggestions?
- Has the work been structured in a requested format (sections, subsections, numeration of diagrams and tables, referencing style, bibliography etc.)?
- Have the work-related terms and concepts been defined?
- Is the work written in a coherent language by using field-specific concepts and terms?
- Are there any errors in terminology?