MSc Research Skills

Lecture: ITC MSc thesis procedures

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ITC MSc thesis procedures

ITC has defined procedures for stages of the MSc thesis process:

1. Research proposal

2. Midterm examination

3. MSc thesis assessment

Official study regulations on Intranet:

http://intranet.itc.nl/education/staff/regulations/studyregulations.aspx

Topic: The thesis process

1. The thesis research proposal

2. Supervision

3. Effective time management

4. Data management and backups

5. Problems

Research proposal

- A written document, about eight pages;

- Research problem, objectives, questions and work plan;

- If appropriate: study area, novelty, data sources

- Submitted for review and grading;

- Defended in an open **oral exam**;

- Basis of **Go – no go** decision (admission or not to **thesis phase**).

Purpose of a research proposal

It must convince the research sponsor (e.g. UT/ITC) that the researcher:

- knows the previous work on a subject,

- and has a **workable plan** on how to go beyond it.

The reviewer should be able to read a proposal and be taken along a path from:

- a **research problem** (what is not known) . . .

- . . . supported by a **literature review** that shows that there is really a problem that has not been solved . . .

- . . . to **research objectives** and then . . .

- a sound **research methodology**, also backed up by literature.

Supervision

The contents of the thesis are the responsibility of the candidate, not UT/ITC, nor the Course, nor the supervisor.

The **student**:

1. designs the thesis project;

    - within the context of the research project (e.g., linked PhD research, ongoing ITC research)
    - the general outline is defined by ITC but elaborated and operationalized by the student

2. collects the data (if applicable);

3. performs the analysis or builds a system or model;

4. writes the thesis; and

5. defends it.

Role of the supervisor

The supervisor is more properly called an **advisor** or **coach**:

- Orient the research (e.g., within context of ongoing research);

- Critically examine student's **ideas**;

- Read the student's **writing** (proposal and draft) and suggesting improvements;

  * some editing, **not rewriting**

- Suggest key **references** or **literature search strategies**;

- Give ideas for promising research **directions**;

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- Keep student clear of known **dead ends** or poor methods;

- Advise on **priorities** and **time management**;

- Communicate lack of progress / possibility of failure to Course Director and student.

Supervisors are **not co-authors** of the thesis.

Who are the supervisors?

- Supervisors are appointed by UT/ITC from its **research staff** according to the research topic.

- In **joint educational programmes** (JEP) another first supervisor is appointed from the **partner institution's** staff, and is primarily responsible for local supervision.

- A second supervisor may be assigned in case of:

  * absence of first supervisor on mission;
  * special expertise of second supervisor.

- Other staff, including PhD candidates, may be involved in the research project (e.g. in joint fieldwork) but are not supervisors.

- In appropriate cases a supervisor is invited from outside UT/ITC, for example a researcher at an partner institution.

Supervision intensity

- The student can expect **an average of two hours per week** in the **thesis execution phase**. This includes face-to-face meetings, but also the time that the supervisor needs to read drafts, check calculations, check literature, etc.

- Time spent in **fieldwork** is included in this average.

- During the **proposal writing phase** the supervision time will be somewhat more.

Supervision method

There is no uniform style, but in general:

- Student and supervisor meet in **regularly-scheduled** meetings, with an agreed agenda set for the next meeting;

  (So, the student can not expect *ad hoc* assistance)

- The meetings are minuted and the Course Director is informed of the **progress**;

- **Written work** must be returned to the student, with comments, within **ten days** (UT/ITC regulation) but usually within a week.

Problems between student and supervisor

Problems can best be avoided by **open communication** between student and supervisor.

But if there still seems to be a problem, Regulations 5.3.4 states:

> "If an MSc participant considers that he/she is not receiving the quality of supervision required in the regulations, the participant should **report this to the Course Director**."

Course director will solve the problem with his/her best judgement.

Time management

- **The work must fit the time available**, design it accordingly – time can not be expanded but work can be reduced;

- The **quantity** of work is not as important as its **quality**;

- **Set priorities**;

- **Work smart**: Before undertaking tedious calculations or samplings, be sure you are calculating or sampling the right thing;

- Do the **simple** things before moving to the **complicated** ones.

- **Plan ahead**: Make a work plan and stick to it;

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Time management (2/2)

- **Be realistic** in your time planning.

    * A human being is not a machine;
    * Budget for personal and work-related setbacks.

- Do **creative work** at the times you work best; save routine tasks for other times;

- Take time to relax and re-focus your energy;

- Don't waste time writing things that are not central to your own research.

- Keep a **log book** of your work.

- Leave time to **check and revise** your work.

- **Do not let problems sit!**

Data and file management

- **Organize** your digital files logically, and **document** this organization.

- Each directory or file should have sufficient **metadata**, most conveniently in a text file:

  * What does it contain?
  * How was it produced?
  * Who produced it?
  * What is its format?

Backups

Back up your computer files at regular intervals; there are many possibilities and no excuses:

- Material stored on the **UT/ITC file servers** (M: drive) are backed up every night by the IT department.

- There are many low-cost or free file servers on the internet, so that your work is saved in more than one **physical location**.

- Burn a CD, write to external storage (disc or flash drive), or place all data in the "cloud" at least once a week.

- Especially, make several archival copies of your **primary data** as soon as possible. Store this away from your primary computer.

Keep copies of each thesis draft; you may want to go back to (parts of) a previous version.

Final thoughts

- UT/ITC provides the **facilities** (library, field, computer, data, lab ...)

- UT/ITC provides experienced and competent **supervisors**

- But, at the end, it's **your** research and **your** thesis

- So that you will be a **qualified junior researcher**.

Topic: Research proposal

Recall: the **purpose** of the MSc research proposal is to:

- **convince** the research sponsor that you know the previous work on a subject;

- and that you have a **workable plan** on how to go beyond it and **contribute** to science via research.

A reviewer should be taken along a path from:

- a **research problem** (what is not known);

- supported by a **literature review** that shows that there is really a problem that has not been solved;

- to **research objectives**

- and then a sound **research methodology**, also backed up by literature.

Proposal procedure

- Several weeks to prepare, meet with a **coach** (who may later be the supervisor)

- The student presents the **written proposal** (about eight pages) to a Thesis Admission Committee

- The student presents the proposal **orally** in a **qualifying examination**, and answers (pointed) questions about it.

- The committee consists of the research theme leader or delegate, and the first and second supervisors or their delegate(s).

Proposal evaluation

The proposal is judged on two counts:

1. Does this candidate have the **ability** to conduct MSc research and write a thesis about it?, assuming that the candidate will receive a normal amount of supervision? This is evidenced by the candidate's ability to prepare a proper proposal and the response to questions.

2. Is the proposed research **feasible** within the time allocated, and given the resources (secondary data, field support, . . .) available?

Proposal results

- The committee decides **whether the student can continue with the MSc thesis phase**, or if their study must be terminated.

- The committee can also give comments on an unsatisfactory proposal, and give a second opportunity to defend a **revised proposal** within two weeks.

- In case the second proposal presentation is not satisfactory, the candidate will not be admitted to the individual research period, and leave UT/ITC with a **certificate of attendance** and their course record.

Topic: Midterm examination

About half-way through the thesis phase of the MSc is the **midterm examination**, to:

- Review **progress**, compare with **plan**;

- Identify research **objectives** and **questions** that are no longer feasible;

- Identify **new** research **objectives** and **questions** that can be met with the data in hand;

- Identify any **difficulties** that might prevent the timely **completion** of the thesis project.

This is a key moment to evaluate progress so far and plan for a successful conclusion of the thesis project.

Preparing for the midterm

1. Convert the **research proposal** into **MSc thesis** format.

   - Use ITC thesis **document style** (Word, LaTeX) or other consistent style which meets specifications;
   - **Introduction** and **Literature review** may need updating but format should not need to change;
   - Change **verb tenses** as necessary: "will" → "were" etc.
   - Begin **glossary** and/or **list of abbreviations** if needed
   - Add placeholder chapters on **results, discussion, conclusion** (or per-topic)
   - Remove **expected outputs**, these will be in the results

Preparing for the midterm – continued

2. Review (and then rewrite) the **objectives** and **questions** to see:

- If they can still be answered with data in hand;
- If not, these should be **removed**;
- If they should be **revised, deleted, or sharpened**;
- If **new** objectives and questions can now be met.

Preparing for the midterm – continued

3. Rethink the **title**

   - Does it now reflect your (new, revised, updated) main objectives and results?
   - Can it be made more attention-grabbing or descriptive?

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Preparing for the midterm – continued

4. Rewrite the **Methods** chapter or section, reflecting what was actually done.

   - It must be clear what you actually did;
   - It should be possible for someone else to **verify or duplicate** the work from your description (including references);
   - This includes a thorough description of any **secondary data**.

Preparing for the midterm – continued

5. Begin the **Results** chapter(s), showing analysis so far.

- At least thorough **description** and **summary** of the **primary data** actually collected
- Preliminary results and their **interpretation**
- This allows **planning** of further analysis

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Preparing for the midterm – concluded

6. Prepare (and practice) a brief **presentation** of these points.

   - Highlight what was actually done
   - Explain what could not be done as planned
     - * *"Explain, never apologize"*
   - Show fieldwork (photos; maps)
   - Show preliminary results
   - Present proposed revisions to objectives and questions
   - Discuss difficulties and your proposed solutions
   - Present plan for the remaining time

[End]

Midterm procedure

- Candidate gives a brief **presentation**:

  - * **Original** problem, objectives and questions
  - * **Progress** (data collected, analysis, . . .)
  - * Preliminary **results**
  - * **Revision** of objectives and questions (if necessary)
  - * **Plan** for finishing the thesis

- Committee discusses the presentation and asks questions

No grade is given; the candidate receives **comments** and **suggestions**.

Clear problem cases are referred to the Course Director.

Topic: MSc thesis assessment

Study regulations on the ITC intranet:

http://intranet.itc.nl/education/staff/regulations/studyregulations.aspx

An ITC thesis is judged by a **Thesis Assessment Board** (TAB)

Thesis submission

- The thesis document is submitted $\approx$ two weeks before the defence (submission date specified by the Course Director)

- If the supervisor believes that the thesis is not satisfactory, s/he must inform both the Course Director and student before submission

- The student can still choose to defend the thesis, the supervisor is only one member of the TAB

Extensions

Postponement of the submission date of the thesis can be given when:

1. The **main cause** of the unsatisfactory level of the thesis has been **beyond the control of the participant**;

2. The extension could lead to an acceptable thesis and examination;

3. **Financing** for the extension is available;

4. The request is made **before the thesis is submitted**.

The participant must take the initiative to **apply in writing** to the Course Director.

Extensions are **not** given for slow progress, student inability, problems that should have been foreseen by the participant, poor time management, or personal time off for travel.

Composition of the Thesis Assessment Board

For degrees conferred at UT/ITC:

1. An **ITC professor or associate professor** in a relevant discipline (who cannot be one of the supervisors);

2. An **external examiner**, either from outside ITC (usually an academic staff member of a university or a knowledge institute) or from a scientific department of ITC that has not played a major role in the course and research theme;

3. The thesis **supervisor**(s);

4. Depending on the specialized knowledge required to fairly judge the thesis, there may also be other UT/ITC scientific workers specialized in those aspects of the thesis;

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. . .

Generally the (Associate) Professor chairs the examination.

Two other people may attend the exam in a formal capacity, but not as voting members:

- The UT/ITC **Course Director** (or representative) to ensure proper procedures;

- A **PhD advisor**, who may be asked to question the candidate.

Examination result

Possible decisions by TAB:

1. The thesis is **satisfactory**. One single mark is given.

2. Subject to **minor corrections** that can be implemented within **three working days** the thesis is satisfactory. One single mark is given, once corrected.

3. The written thesis is **not satisfactory** and a FAIL grade is given. However, the presentation and defence have shown that the participant is capable of performing principal research tasks. Subject to **major changes**, the participant may re-submit the written work within **three months** for a new assessment.

4. The thesis is **not satisfactory** and is given the FAIL grade.

Option (3) **no ITC supervision** is provided; *not* an extension of the study period.

Elements of the mark

The mark for a satisfactory thesis is combined from three elements:

1. the **written thesis**;

2. the **oral defense** of the thesis contents;

3. assessment of the **learning process**.

Of these the written thesis receives by far the highest weight.

Grading scale

100 **"Perfect"**: outstanding innovation, superb writing and interpretation, no more could be expected in an MSc thesis period

90, 95 **or** 100 **Excellent**: publication quality, no flaws, quite innovative, could easily be adapted as a journal article or a chapter in a PhD thesis;

80 **or** 85 **Very Good**; well above expectations, only minor flaws, innovative, research has no serious questions and can be incorporated into a journal article;

70 **or** 75 **Good**; meets expectations of a typical work within the time allowed and with the facilities available; nothing special but nothing really bad;

60 **or** 65 **Pass**: meets minimum standards, passing; not innovative, serious flaws;

no mark **Fail**: does not meet minimum standards.

Subjectivity

The interpretation of terms such as 'good', 'well above expectation' etc. is **completely up to the discretion of the Board**.

However there is some more detailed description (see next slides).

Most Boards give points in steps of 5, e.g. 75 for a thesis which is not "outstanding" but has features that make it more than simply "good".

Evaluation criteria

Exam committees follow the "Instructions for Thesis Assessment Board" approved by the ITCExamination Board in September 2011; the criteria are detailed on the following slides.

However, the grade is **holistic** summary of the thesis, not the sum of points from the checklist.

Criterion 1 – Scientific scope and depth

The research addresses a well-formulated relevant problem of sufficient scope and depth linked to relevant literature.

- Is the research **problem** clearly defined? (E.g. through well formulated research questions).

- Is a **relevant** research problem being addressed?

- Has the research problem been placed in the **context** of the scientific field concerned?

- Is there a critical discussion of and link to relevant **contemporary literature**?

- Is the research undertaken of sufficient **scope and depth**?

- Is there evidence of a thorough **understanding and mastering** of the subject and discipline?

- Is there an **innovative** part in the research?

Criterion 2 – Scientific method

The research is undertaken with a clear and transparent methodology with proper use of concepts, methods and techniques.

- Were the research methods appropriate to answer research questions (conceptualization and operationalisation of the research questions)

- Is the research process and methodology clearly described and well structured?

- Are the methods and techniques for data collection and analysis properly selected and applied?

- Was the data collection and analysis performed using the correct methods and with proper reference to literature?

- Have the objectives been reached and/or are research questions answered?

- Are conclusions drawn correctly after analysis of data?

- Are the conclusions and statements supported by evidence?

- Is there a critical discussion and reflection on the research findings and awareness of the limitations of the research?

Criterion 3 – Reporting

The thesis is a well structured and readable, with a clear layout.

- Is the thesis well and clearly written?

- Is the thesis well structured

- Is the thesis logically written?

- Is proper use made of literature references, and was proper referencing applied?

- Has effective use been made of visualization tools like maps, tables and graphics?

Criterion 4 – Presentation and defense

The research is well presented, followed by a discussion with proper argumentation.

- Did the presentation provide a clear and concise summary of the research?

- Was the candidate capable to respond adequately to questions, criticisms and comments?

- Did the candidate make proper use of the thesis during the defense?

Criterion 5 – Process

The candidate worked in a structured and rather independent way, while making adequate use of the guidance of the supervisor.

- Does the thesis reflect the candidates' own research ideas and efforts?

- Was the research planned and undertaken in an independent and structured way?

- Did the candidate take initiatives?

- Was there a good communication between the candidate and the supervisors/staff?

The supervisor(s) inform the committee of their assessment of these points.

Preparing for the thesis defence

- **Know your thesis** – where to find everything which might be discussed.

- Prepare (and practice) a brief (8–10 minute) **presentation** of these points:

  * The research problem and questions
  * The methods applied
  * The principal results
  * The principal conclusions

- Recall – the committee has read the thesis, this is not a general lecture; so the presentation is just to orient the defence.

- You may choose to have some **hidden slides** to show if they are helpful to answer questions – examples: maps, figures and tables.

During the thesis defence

- Listen carefully and answer the questions directly and to-the-point.

- Only answer what was asked.

- It's a scientific discussion, so you are free to disagree with an examiner – but make sure you can back up your statement with a result from your thesis or literature cited in it.

- If you don't know something – say so.

And . . . **enjoy your big day!**