Master thesis Computer Science: Software Engineering

2025 - 2026

Is part of the next programmes:

- M0012004 Master of Computer Science: Software Engineering

Course Code:	2502WETMAP
Study Domain:	Computer Science
Semester:	2E SEM
Contact Hours:	0
Credits:	30
Study Load (hours):	840
Contract Restrictions:	Exam contract not possible
Language of Instructions:	NED
Lecturer(s):	T Wout Bittremieux T Toon Calders T Moharram Challenger

	T Serge Demeyer T Jeroen Famaey T Floris Geerts T Bart Goethals T Steven Latré T Kris Laukens T José Antonio Oramas Mogrovejo T Hans Vangheluwe T Benny Van Houdt M Guillermo Alberto Perez
Examperiod:	exam in the 2nd semester
Credit required to obtain degree:	Yes

1. Prerequisites *

reading and comprehending of:

- English

specific prerequisites for this course

There are no general prerequisites required. Specific requirements can be demanded by the research group where the master project will be executed.

2. Learning outcomes *

- You are able to clearly formulate a research question, motivate its relevance, and describe its context. [Fundamental Research]
- You are capable of correctly relating your work to existing scientific literature. [Fundamental Research]
- You have gained theoretical insight and practical experience with the methods, techniques and tools that are used within a given subdomain of Computer Science. [Research and Development]

- You are able to apply published research results or techniques to a new context independently. [Fundamental Research]
- You are competent to make well-founded choices with regards to alternatives in aforementioned methods, techniques and tools that present themselves while conducting research. [Selection of techniques, methods, languages, architectures, ... / Research and Development]
- You can draw correct conclusions with respect to the implications of your own work and the research question. [Fundamental Research]
- You are capable of reporting both orally and in written form on the research conducted, at an academic level. [Reporting]
- You are competent to organize and plan research activities independently under the guidance of a promotor [Leading a group of Computer Scientists].

3. Course contents *

The Master's Thesis forms the concluding part of the Master in Computer Science. During its course the student applies the different competencies obtained throughout his academic programme in order to address a specific research question. During the course of the thesis you are supervised in accordance with the chosen subject matter and associated research activities. Specifics related to the process of executing the Master's thesis can be found in the "Guidelines Master Thesis Computer Science" document (see esp.uantwerpen.be). Students are requested to carefully read these guidelines.

- **What**? The Master's Thesis serves as an aptitude test for the Master in Computer Science. Its final deliverable, the thesis document, is an original written text that is to demonstrate the student's theoretical insight in and practical experience with the methods, techniques and tools that are applied in scientific research within a particular subdomain of Computer Science. The research activities related to the thesis can be executed within the context of a research group within the Master of Computer Science, or within a external organisation (e.g. a company). In the latter case, the Master's Thesis is linked to an internship within said company and an additional external supervisor.
- **When**? Although the master's thesis is formally registered in the curriculum as a 2nd semester course, students are expected to work on their thesis during the entire academic year, given the magnitude of the work. Therefore, the subject

and promotor choice can already be prepared in
the year that precedes the master's thesis. In any case the choice has to be made in the first weeks of the year in which the student enrols for the master's thesis. The registration of a thesis subject and promoter occurs in two phases. In the first phase (to be completed by the end of June in the year preceding the thesis) the registration is handled via ESP. The student who wants to start a thesis should take initiative. The promotors verify whether all eligible students registered a master's thesis and sends a reminder to those who did not. In a second phase (to be completed in the 4th week of the academic year in which the student enrolls for the master's) the choice of thesis subject and promoter is confirmed in SiSA. The student must take initiative. The promotor is to approve the choice before the end of the 5th week. During this second phase all other administrative matters (Request Internship, Risk Analysis, Work Site Form, ...) should be completed as well.

- **Who**? The following individuals are involved in the Master's Thesis:
  The promotor, a member of the university's faculty (Zelfstandig Academisch Personeel (ZAP)), takes responsibility for the proper guidance of the process that leads to the submission and defense of a student's thesis. The following are eligible to take on the role of promotor: all faculty members listed on the course description for a master's thesis. The promotor selects reviewers, organizes the thesis' defense and takes responsibility for a fair assessment of the thesis. **At least one of the promotors of Research Internship I & II, and the Master thesis should be different from the other two; that is: is not allowed to have the same promotor for all three courses : Research Internship I, Research Internship II, and the master thesis.**
  An optional co-promotor is an expert in the thesis' domain who can take shared responsibility for the quality of the thesis' content.
  An assistant is a member of the Teaching Assistants (Assisterend Academisch Personeel (AAP)) or Research Assistants (Bijzonder Academisch Personeel (BAP)) of the university who can be the student's first point of contact for guidance.
  An internship supervisor is a member of an organization outside of the university that has commissioned an internship within the context of which a Master's Thesis can be completed.
  A reviewer is a person that takes shared responsibility for assessing the thesis. A reviewer needs to have obtained at least a Master's degree.

- **Types**? Typically, a Master thesis in Computer Science will be one of the following types (consult the guidelines on Blackboard for more information on each type):
  - Feasibility Study
  - Case Study
  - Comparative Study
  - Literature Study
  - Formal Model
  - Simulation
  - Process Evaluation

4. International dimension *

- This course stimulates international and intercultural competences.
- Students use course materials in a foreign language.

5. Teaching method and planned learning activities

5.1 Used teaching methods *

Class contact teaching

Personal work

Paper

- Individually

5.2 Planned learning activities and teaching methods

Guidelines for choosing a thesis topic and promotor, details on the proces of completing a thesis and submitting it can be found in the document on esp.uantwerpen.be.

5.3 Facilities for working students *

Others

Supervision The student and promotor define a work plan, possibly in consultation with a co-promotor, internship supervisor or teaching assistant, for completion of the Master's Thesis. The plan also defines how the supervision of the work will be arranged. (When will the parties concerned meet (bi-weekly / monthly / ...) ? How will they contact each other (telephone / e-mail / after class / Skype) ? Who takes the initiative (student / teaching assistant / ...?)
The student carries the final responsibility for the execution of the planning, for promptly pointing out potential problems, and for the submission of the thesis.
The promotor presents the student with the necessary feedback regarding to intermediate results, corrective supervision of the work, and suggests solutions for problems raised. This is done in possible cooperation with the co-promotor, internship supervisor and teaching assistant.

6. Assessment method and criteria *

6.1 Used assessment methods *

Other assessment methods

- Written assignment
- Presentation
- Jury

6.2 Assessment criteria *

The assessment can take into account the process (permanent evaluation), the final product (single evaluation) or both. Regardless of the assessment methodology, each Master's Thesis must at a bare minimum demonstrate that the student :

- has independently gained insight in the subject matter;
- is able to present a complex subject matter at a level understandable by his fellow students

The detailed assessment criteria and their impact on the final grade can be found in the assessment forms, part of the document Guidelines Master Thesis Computer Science (see esp.uantwerpen.be).

- **Jury** For each individual thesis, the promotor will select two reviewers. That number can be extended if called for. At least one reviewer must be associated with a research group different from the promotor's. A co-promotor (if present) always fulfills a reviewer role. An internship supervisor (if present) always fulfills a reviewer role. A teaching assistant never fulfills a reviewer role, but takes on an advisory role.
- **Defense** The defense consists of an oral presentation, possibly including a demonstration, during which the student concisely summarizes his work, followed by a question and answer session. Every attendee is entitled to ask questions to which the student is to respond to the best of his/her abilities.

Copied Code - Code created by Generative AI

For implementations supporting the master thesis work, students may copy code from the internet, but must do so explicit attribution of the source where it is copied from. Students may use generative AI tools for the code adopted in their master thesis, but must do so with explicit acknowledgment, i.e. it must be clearly indicated which code was created by which tools. During the thesis defence, students may be asked to elaborate on how they used generative AI.

Support from generative AI

Students may use generative AI tools as for writing the master thesis, similar to initial search engines such as Google and for checking grammar and spelling. During the thesis defence, students may be asked to elaborate on how they used generative AI.

7. Study material

7.1 Required reading *

The research group informs the student about compulsory reading and study material for the master project.

7.2 Optional reading

The following study material can be studied voluntarily :

The research group informs the student about recommended reading and study material for the master project.

8. Contact information *

All contact details of the promotors can be obtained via https://www.uantwerpen.be/en/staff/

9. Tutoring

- **Inform yourself.** Investigate the different thesis subjects on the ESP system (https://esp.uantwerpen.be/) and attend the information session (details will be communicated by email). This way, make a subject choice for which you have a profound interest.
- **Invest sufficient time in planning and follow-up.**
- **Take initiative.** You carry the ultimate responsibility for the execution of the planning, for promptly pointing out potential problems, and for the submission of the thesis. Take sufficient initiative with respect to these actions.