

## Master's Dissertation (C002312)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits** 30.0      **Study time** 840 h      **Contact hrs** 480.0 h

**Course offerings and teaching methods in academic year 2022-2023**

B (year)      English      Gent      master's dissertation      480.0 h

**Lecturers in academic year 2022-2023**

N., N.      lecturer-in-charge

**Offered in the following programmes in 2022-2023**

	<b>crdts</b>	<b>offering</b>
<a href="#">Master of Science in Biology</a>	30	B

**Teaching languages**

Dutch, English

**Keywords**

Scientific method, experimental design, data acquisition, statistical analyses, synthesis, literature.

**Position of the course**

The master thesis implies the autonomously realisation of a research project, under the guidance of a supervisor and tutor. This thesis work relies on the theoretical and practical competences that have been obtained during the bachelor and master program, and through which an integrated approach is followed to perform the research within a research team. The topic of the thesis is already decided during the first master (as part of the course "Scientific Communication and Reporting I").

The master thesis is an essential part of the master training, and allows a screening for the quality at which a student can recognise and formulate a scientific question, and translate that into an experimentally driven study. This study then results into a master thesis, which can be delivered both as a traditional thesis or a manuscript that fulfills the requirements for submission to an international, peer-reviewed biological journal.

The research project involves the collecting, processing, analysis and interpretation of data.

The research project does take place within the own faculty departments, another faculty of the UGent, another research institution (possibly abroad) or a company. For a stay abroad, a student may obtain a scholarship as part of the EU Erasmus program only if the duration of the internship is at least 2 months.

For students going abroad the faculty member sending out the student is the responsible supervisor.

**Contents**

In the course of the first master year, the students can (in agreement with a potential supervisor) make a suggestion for a research topic, or select a topic provided by supervisors. An exploratory literature review is performed in the context of the course "Scientific Communication and Reporting I", after which the practical realization of the master study takes place during the second master year.

Depending on the subject, the master thesis involves a preparatory phase, a phase of data gathering (can be in lab environment or in the field), data analyses and production of a written report. During these phases, the students are guided by a tutor, and progression is supervised

by and discussed with the supervisor. The student then realizes autonomously the research, but with interaction with tutor and supervisor.

The master thesis is written in Dutch or English, and contains the following topics (general guidelines and tips for scientific report writing are subject of the course "Scientific Communication and Reporting I"): (1) introduction (including scientific problem), (2) aims, (3) material and methods, (4) results, (5) discussion, (6) conclusion, (7) summary, (8) acknowledgments, (9) references. The level, quality and depth of the thesis must be in accordance to what is expected from a scientific publication in a peer-reviewed journal. A concise way of reporting should be envisioned: the score obtained for the master thesis does not depend on its volume. The student can opt for writing the thesis out in the format of a manuscript that follows the guidelines for a particular international, peer-reviewed journal. The decision to do so is taken in consensus between the student and the supervisor.

### **Initial competences**

The master thesis builds upon the self-reliant study activities realized in "Scientific Communication and Reporting I", and on the theoretical and practical competences obtained during the bachelor and master training. The master thesis can only be started after having successfully passed the course "Scientific Communication and Reporting I".

### **Final competences**

- 1 The student is able to rely on scientific literature to recognize and formulate a scientific problem, and to translate that into an experimental design.
- 2 He/she can therefor rely on existing theories and models, and in a self-reliant manner use literature to modify these models so that they can be applied on their personal research project.
- 3 The student is able to practically realize the experiment, specifically designated to the hypotheses to be tested, and modify where necessary.
- 4 He/she can realize in an accurate and critical manner the required data gathering, data management and data analysis using the appropriate statistical methods, and synthesise the own findings with the integration of recent specialized scientific literature.
- 5 Based on that, the proper conclusions can be drawn, including a critical evaluation of the applied analytical methods and obtained conclusions, as well as formulate suggestions for future research.
- 6 The obtained research competences allow the student to tackle both fundamental and applied biological problems, both individually and as a member of a research team.
- 7 The student can communicate the obtained research results, both in Dutch and English, and this in a written (thesis) and oral (presentation) manner towards a specialized and laymen audience.
- 8 The student is capable to adapt the applied work frame (used in the master study), enabling him/her to perform in a self-reliant manner, accurate and reliable research within a professional context.

### **Conditions for credit contract**

This course unit cannot be taken via a credit contract

### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

### **Teaching methods**

Master's dissertation, work placement

### **Learning materials and price**

Depending on the research subject, the required literature will be made available to the student, whether through the central university library (including electronic library) or through the specialised library of the research group where the thesis research is performed.

### **References**

Practical Skills in Biology (Weyers, Reed & Jones, 5e editie, 2012) – ISBN: 1408245477  
Experimental Design for the Life Sciences - Graeme D. Ruxton & N. Colgrave (2nd edition) - Oxford University Press (Oxford, ISBN 0-19-928511-X)  
Scientific Method in Practice - Hugh G. Gauch, Jr (2007) - Cambridge University Press (ISBN 978-0-521-01708-4)

### **Course content-related study coaching**

The student is under the direct guidance of a tutor (predoctoral or postdoctoral level) with the necessary experience in scientific research related to the thesis subject, and where the coordination falls under the responsibility of the supervisor.

**Evaluation methods**

end-of-term assessment

**Examination methods in case of periodic evaluation during the first examination period**

Assignment

**Examination methods in case of periodic evaluation during the second examination period**

Assignment

**Examination methods in case of permanent evaluation**

**Possibilities of retake in case of permanent evaluation**

not applicable

**Calculation of the examination mark**

The master thesis is evaluated at two levels: the written report (thesis) and oral report (presentation). Both reports are evaluated by the supervisor (in agreement with the tutor) and by two reading committee members, of which at least one is external to the research group of the supervisor. The reading committee members submit a written report, which the students can consult. Based on the evaluation form, a score is given by each member of the reading committee, based on the following topics: Scientific contents (correctness, originality, depth, conclusions, references), and the Thesis itself (organization, language, figures and tables, technical layout). After having attended the oral presentation, the members of the reading committee deliberate and give a final score based on the individual scores.