

Guidelines master's dissertation Biology

EXAMINATION BOARD MASTER BIOLOGY

Chair prof. dr. Annemieke Verbeken

Mieke.Verbeken@UGent.be, +32 9 264 50 70

Secretary prof. dr. Tom Moens

Tom.Moens@UGent.be, +32 9 264 85 22

Academic year 2016-2017

Version 24-Jan-17



Registration of master's dissertation topics

1. Around **October 1**, the Chair of the Educational Board (ECB) calls upon (1) all ZAP-members and postdoctoral researchers of the Department of Biology (WE11) as well as (2) the lecturers of other departments involved in the Biology training to submit topics for the assignment related to the course 'Academic Grant Writing' (referred to as 'seminar work') (current academic year) and the resulting master's dissertation (next academic year).
2. ZAP-members and postdoctoral researchers of the Department of Biology, and of other departments within or outside the Faculty of Science, belonging to Ghent University and involved in the Biology programme, can act as supervisor. Other ZAP-members (e.g. honorary visiting professors) can act as supervisor provided that this is approved by the Examination Committee.
3. ZAP members and employees (in possession of a doctoral degree and appointed for at least the duration of the master's dissertation) from other universities or scientific institutions can submit topics through a senior academic staff member or postdoctoral researcher of the Biology Department or via lecturers from other departments involved in the Biology training. If an external supervisor is involved, an internal supervisor needs to be appointed too. The persons involved decide between themselves who becomes supervisor and who co-supervisor.
4. Topics (always in English, in order to allow foreign students to choose a subject) should be submitted before **October 23** via Curios, where the following information is required: (1) the tentative title; (2) the *supervisor (promoter)*; (3) facultatively also the *co-supervisor*; (4) the *effective tutor* (this may be a ZAP member (whether or not the supervisor), a postdoctoral researcher or a doctoral student with expertise on the subject); and (5) the description of the subject (max. 1 page). The Curios link and further guidance for this procedure will be communicated via Minerva and e-mail.
5. If students wish to submit their own subjects, they should do so in time (**before October 15**) by contacting a potential supervisor (see above) and write out the subject in consultation with him/her. The supervisor registers this topic following the procedure described in section 2, before October 24th stating the name of the student who will carry out the subject.
6. The ECB shall evaluate all topics submitted for its contents and the link with the potential promoter, and shall approve no later than **November 4th**.
7. On **November 14th** the ECB will spread the approved subjects among the students of the 1st Master of Biology (via Minerva). Students can then start informing themselves with the involved research groups (supervisors, co-supervisors, tutors). Infosessions may be organized by these research groups (call and ppt's will be communicated via Minerva).
8. Choice of subject and motivation: every student registers for one topic explaining why he/she chooses this topic, **deadline is November 28th**. If several students chose the same subject, the supervisor decides who gets the topic assigned (**deadline December 2nd**). The supervisor will contact the students involved. Those who are not selected in this first round, should look for a new subject, and therefore contact the supervisors involved. The list of topics still available can be accessed through Minerva. All students should have a topic assigned to **before December 9th**.

9. The seminar work is executed during the second semester of the first master year. If the student succeeds for this course, he/she can start with the implementation of the master's dissertation. The final title and readers, as proposed by the supervisors, are fixed in March. Only in exceptional cases, the master's dissertation can deal with a subject other than the seminar work and this always requires a thorough motivation of the supervisor and ratification of the Educational Board.
10. Per master's dissertation, three readers (commissioners) are indicated, where at least one member is not part of the supervisor's research group or is part of this research group but involved in a distinctly different research line. A reader that is not a PhD, should have at least four years of experience in scientific research.
A tutor cannot act as reader, because tutors are already involved in filling out the score form "supervisor" together with the supervisor. A co-supervisor may act as reader, on condition that the other reader is external to both the research groups of supervisor and co-supervisor, or is involved in a distinctly different research line.

**Assignment, objectives and evaluation of the task
within the course "Academic Grant Writing" - Seminar
work (1st master of Biology)**

11. The assignment involves the development of a full project proposal (format is FWO PhD grants), which involves the topic of the master's dissertation as the central theme.
12. The objective of this assignment is twofold:
 - a. Putting in practice the skills of scientific reporting, with obtaining research funding for the project as a (virtual) goal (as explained during the lectures "Academic Grant Writing");
 - b. Working out the conceptual framework and literature state-of-the-art that is related to the topic, making clear what the scientific question/problem is, what the objectives/hypotheses of the project are, and how they will be tackled (methodologically). The master thesis should then be a subtopic of this proposal (See [ECTS sheet](#) for more details)
13. The evaluation is based on the objectives set out above, and is performed by one of the instructors(lecturers) of the course and by the supervisor(s). The lecturers evaluate the work mainly with respect to the first objective (a) and will focus more on generic competences, whereas the scientific content (objective b) is evaluated by the supervisor (and co-supervisors). The evaluation happens by means of a [form](#), where a rating is assigned to different sections that apply to the research proposal and that reflect the competences being achieved (learning outcomes).

Form, minimum content and submission date of the master's dissertation

General

14. The master's dissertation must be written in Dutch or English and include the following sections (general guidelines and tips for writing scientific texts are handed over in the course "Wetenschappelijke methode en Bachelorproef"): (1) introduction (incl. problem), (2) objective(s), (3) material and methods, (4) results, (5) discussion (6) conclusion, (7), summary (8), acknowledgments, (9) reference list ((10), see also paragraph 24).
15. **Level, quality and depth of the master's dissertation must be equivalent to or in the form of a scientific publication in a peer-reviewed journal. The master's dissertation should, in other words, pursue conciseness: the quotation of the master's dissertation does not depend on its volume.** In addition it may even be opted to write the dissertation in manuscript form for a scientific publication in a peer-reviewed journal. This should be done in consultation with the supervisor. It may be decided that additional information (which may be inserted into a dissertation, but not in a manuscript) is added as an appendix.
16. In the section *Introduction*, the problem is specified in a general and sufficiently thorough scientific-historical context, with reference to the relevant scientific literature¹ and the research question(s). The subject is situated in the research field of the research group where the student works on his/her dissertation (where relevant, with reference to the project in which the research is done).
17. In the section *Objective*, the objectives and working hypotheses (that are to be focused on in the discussion and summary) are clearly defined and described.
18. In the section *Material and methods*, the experimental design of the research is clearly formulated. Here a brief description of the nature and origin of the study objects and a thorough and complete review of the methods is given: study field, sampling equipment and techniques, identification work, experimental design, statistical and/or mathematical processing, used equipment and techniques, software ... The research groups and institutions where the work (or parts of it) was performed are also explicitly mentioned.
19. In the section *Results*, observations and results from the analyses are presented in a clear and logical structure. Tables and figures are clearly integrated in the text or displayed separately (if there are many illustrations, it is desirable to include them in a separate bundle) and must always be provided with a clear legend. In any case, the text should refer to every table and/or figure explicitly and unambiguously. Extensive tables with primary data (measurements, counts, etc.) should never be included *in* the text, but should be enclosed as an appendix (see paragraph 26).

¹ A separate and comprehensive section 'study of literature' is not mandatory, and must focus on the topic of the problem. A 'study of literature' is not a compilation of all information that indirectly relates to the master's dissertation (see lectures 'Academic Grant Writing').

20. In the section *Discussion*, the results are critically discussed and compared with the relevant literature, all in relation to the hypotheses formulated earlier. No new observations from the study should be presented here. Only those results should be summarized and discussed where additional information (through integration with literature) is being provided (so, the *Discussion* should not be a repetition of what is already mentioned in the *Results* part).
21. At the end of the *Discussion* follow the *Conclusions*. These include a brief and in consecutive points formulated summary of the main findings of the study (focusing on those that directly answer the hypotheses formulated).
22. The *Summary* must cover minimum two, maximum three pages. An English translation of the summary is required, especially if the work is situated within an international project. If the master's dissertation is written in English, a Dutch summary should be added.
23. The *Reference* list contains only publications referred to in the text by author's name and year (articles and books), with full reference, in a clear alphabetical list (by author's name). Background literature read by the student, which is not explicitly referred to in the work, is not included in the reference list. More information about bibliography, can be found in the (Dutch) document with the [guidelines for the Bachelor's dissertation](#) (also available on the Minerva infosite CBBIOOL).
24. In specific cases it is advisable to add a glossary, an index of taxa and/or keywords, etc..
25. The title page should be composed as follows, and should include at least the information mentioned below. In case of confidential scientific data, a copyright clause may be included (see below). This clause can be listed on the first page after the title page. (A template for the cover page and first page can be found on the Minerva infosite CMBIOY, where fields can be filled out using the F11 key.)
 - a. Name research group
 - b. Name & surname student
 - c. Title master's dissertation
 - d. Names & titles supervisors and co-supervisors (in case of a co-supervisor external to Ghent University, also name institution)
 - e. Name of tutor(s)
 - f. Listing:
 - i. **NL:** "Masterproef voorgelegd tot het behalen van de graad van Master of Science in Biology"
 - ii. **ENG:** "Master's dissertation submitted to obtain the degree of Master of Science in Biology"
 - g. Copyright clause:
 - i. **NL:** "© Deze masterproef bevat vertrouwelijke informatie en vertrouwelijke onderzoeksresultaten die toebehoren aan de UGent. De inhoud van de masterproef mag onder geen enkele manier publiek gemaakt worden, noch geheel noch gedeeltelijk zonder de uitdrukkelijke schriftelijke voorafgaandelijke toestemming van de UGent-vertegenwoordiger, in casu de promotor. Zo is het nemen van kopieën of het op eender welke

wijze dupliceren van het eindwerk verboden, tenzij met schriftelijke toestemming. Het niet respecteren van de confidentiële aard van het eindwerk veroorzaakt onherstelbare schade aan de UGent. Ingeval een geschil zou ontstaan in het kader van deze verklaring, zijn de rechtbanken van het arrondissement Gent uitsluitend bevoegd daarvan kennis te nemen.”

- ii. **ENG:** "© All rights reserved. This thesis contains confidential information and confidential research results that are property to the UGent. The contents of this master thesis may under no circumstances be made public, nor complete or partial, without the explicit and preceding permission of the UGent representative, i.e. the supervisor. The thesis may under no circumstances be copied or duplicated in any form, unless permission granted in written form. Any violation of the confidential nature of this thesis may impose irreparable damage to the UGent. In case of a dispute that may arise within the context of this declaration, the Judicial Court of Gent only is competent to be notified.”

26. The student consults with his/her supervisor how the **primary data** (counts, measurements, etc.) on which the master's dissertation is based, are to be presented. This can be done as an attachment to the Minerva master's dissertation module CX00002A, where the separate attachment(s) can be marked as confidential, or in any other way.
27. Minimum two printed copies of the master's dissertation are submitted at the secretariat of the Examination Board ([Inge Borghgraef, K.L.Ledeganckstraat 35, 3rd floor, 3rd phase, room 3 02](#)). These are for the University Library, and for the Chair of the Examination Board. The latter copy is also available as an inspection copy for the jury of the Prize Pierre Verkerk, the Prize Francine Ronsse and the Prize Gabriëlle De Waele (see paragraph 46). **If more than 2 printed copies are needed** (supervisors and readers can request a hardcopy in addition to the electronic version), the students are informed in time: a list of reading commissioners who want a hard copy will appear on Minerva well in advance of the deadline. These paper copies for supervisor and readers should be submitted to Mrs. Borghgraef who will forward them. The student asks the supervisor if a printed copy is needed for the co-supervisor and the tutor, and delivers these him/herself.

Note: It is allowed and even desirable that the master's dissertation is printed on recycled paper. Choose high-quality paper so that text and figures don't lose legibility. Double-sided printing is also encouraged. A **pdf version** should be uploaded to the **master's dissertation module of the Faculty of Science at Minerva** (Course site **CX00002A**) (See the [manual](#) for students and supervisors) The **certificate** that is generated by the student, should be issued along with the printed copies. The electronic version will be forwarded by the secretary of the Examination Board to the supervisor, readers, co-supervisors and tutors.

28. In the first examination period (June), the master's dissertation is submitted personally by the student on the annually communicated deadline (this academic year on **May 29 2016 before 4:00 pm**) (see 27). Students are urged to submit the master's dissertation during the first examination period. Only dissertations submitted in the first examination session are eligible for the Prizes Verkerk, Francine Ronsse and Gabriëlle De Waele (see paragraph 46). Only in specific circumstances and after consultation with the supervisor and the Examination Board, a master's dissertation can be submitted in the second examination period (September). Master's dissertations that are not submitted by the deadline of the first examination period, will automatically be postponed to the next examination period. In the second examination period, the deadline for submission is **August 21, 2016 before 12:00 am**.
29. In preparation of the oral defence (Dutch or English) of the master's dissertation, a PowerPoint presentation is to be prepared. This should be done in consultation with the supervisor and tutor. The results are to be presented in a lecture room (reserved by the supervisor). The supervisor makes the reservation and invites co-supervisors, readers, tutors and student. The defence can be organized per research group, where the students working in the same group attend each other's presentation, or it can be organized student per student.

Code of conduct

30. The data obtained by the student in the context of the master's dissertation are *not* his/her personal property. They belong to the client requesting the research, the research group, the funding authorities and/or institution where the research was carried out. Scientific knowledge, funded by the community, belongs to the community.
31. Students have the right to be co-authors of publications that directly follow from the data obtained within the master's thesis. The rights to co-authorship of the student expire after two years (unless otherwise agreed), if he/she has shown no interest in publishing until then, despite former agreement about it.
32. When two (or more) students work on closely related subjects, where even data from one student have to be mentioned in the master's dissertation of the other student (and eventually further processed), every student states clearly which data were collected by him/herself and which by the fellow student. Since the master's dissertations, as a formal course to be examined, imply an individual assessment of each student, they should also be made individually by each student. In all fairness, no data from one student can be recorded by the other one without acknowledgment, even if they went together in the field or carried out experiments together. In this case, the students, together with their supervisors, make correct agreements on the separation of data (in terms of authorship) in the master's dissertation. In contrast to the preparation of manuscripts for scientific publications, where no individual examination assessment is involved, and that can be fully achieved through teamwork (and thus justify a co-authorship), master's dissertations are courses from the second cycle of the individual training that need to be assessed individually.
33. The supervisor must obviously be qualified for the subject, if necessary assisted by a tutor and/or a co-supervisor. In any case, the supervisor has the final responsibility regarding the continued supervision of the student (available for meetings, problem solving, act in case of delays so that the deadline is met, ...).
34. A change in supervisor can only be allowed at the request of the initially appointed supervisor.
35. The supervisor has to make available the necessary physical infrastructure (in terms of instruments, computer and space), literature and financial means for the student (s) or he has an agreement regarding this with a colleague. Within the foregoing context, there may initially be more master's dissertation topics presented to the students by a potential supervisor than there is room available, but ultimately, there may be no more subjects allowed to students then (1), the space available needed to perform the required research activities, and (2) that the mentoring capacity allow, but (3) in any case, there will be no more than three master's dissertations per supervisor-tutor or per tutor allowed within each research group (eg: max 3 if the supervisor is also tutor, max 3 if the supervisor is not a tutor and disposes of a tutor, max 6 if the supervisor is not a tutor and disposes of two tutors, or if the supervisor is tutor, and disposes of one additional tutor, etc...).

36. The supervisor makes sure that the student submits his/her master's dissertation before the absolute deadline (build in safety margin in the timing!) (See paragraph 28); the student respects the agreed timing and keeps in mind that the supervisor and/or tutor can read the texts and provide feedback before the final version is submitted. The Examination Board convenes the reading committee for the defence (and individually claimed defence if needed) of the master's dissertation and the final deliberation on it.
37. The supervisor and the other readers commit themselves to (1) duly fill out the evaluation forms in the Google Spreadsheets-file they will get access to, (2) to be present on the defence of the master's dissertation by the student, (3) to participate in the final deliberation on the master's dissertation and (4) to fill out the final assessment with the other readers and supervisor in the Google Spreadsheet for their students.
38. Readers working and living outside Ghent are reimbursed by the Biology Department for the substantiated travel expenses submitted by them regarding the presence on the presentation of the master's dissertation and the subsequent final deliberation.
39. In case of absence on the defence and the final deliberation of the master's dissertation, the reader motivates this in advance with the Chair or Secretary of the Examination Board, he/she also informs the supervisor, and communicates where, as well as when and how (phone, fax, e-mail) he/she can be reached for the final deliberation regarding the final assessment of the master's dissertation. He/she shares his/her agreement with the final marks by signed fax or e-mail (full print to be submitted by the supervisor to the Examination Board's secretary). Obviously, every supervisor does everything in his/her power to be present at the defence and to lead the subsequent deliberation with the other readers.
40. The students, supervisors and tutors may at any time *in the first order* contact the Chair of the Examination Board, if difficulties arise with regard to the master's dissertation in which they are involved. Of course, the student can, *in the second order*, in non-satisfaction, formulate his/her complaint to the Ombudsperson of the Faculty of Sciences of Ghent University

Evaluation and marks of the master's dissertation

41. The supervisor-reader fills out his part of the evaluation form (see also 37).
42. The other two readers fill out their part of the evaluation form (see also 37).
43. Prior to the oral public defence of the master's dissertation (using a PowerPoint presentation), students will in advance be able to look into the evaluation documents (specified in 41 and 42), (Mrs. Borghgraef will send them to the students via Minerva). The *defence* includes: a summarizing explanation of the master's dissertation for maximum 15 min and answers to questions from the jury and other audience for maximum 15 min. This defence can take place in Dutch or English.
44. The defence of the master's dissertation occurs in the presence of the supervisor, readers and tutor. The supervisor decides whether he organizes the defences of his students in one group, or individually.
45. After the defence, the supervisor deliberates with the other readers, and the final score on 20 is determined based on the reports of the readers and the evaluation of the oral presentation and defence.
46. Prizes: master's dissertations submitted in the first examination session (June) are eligible for the following prizes. The proclamation takes place during the general proclamation of the first examination session. The prizes themselves (certificate + sum of money) are handed over to the winners at the graduation ceremony for the Faculty of Science in the Aula:
 - a. "**Prize Pierre Verkerk**" for the "best master's dissertation". The two best master's dissertations are selected by a separate committee.
 - b. "**Prize Francine Ronsse**" for an excellent master's dissertation dealing with social or philosophical interfaces with biology. Master's dissertations that carry out an important message to a wider audience, where the importance of the scientific method and the clear, rational thinking is stressed, are eligible. Examples of possible topics are the potential dangers for science in general and biology in particular, of certain forms of ideological thinking; animal welfare; the role of evolutionary theory in philosophical debates, and the like.
 - c. "**Prize Gabriëlle De Waele**" for a Dutch master's dissertation of high level, which makes use of the plant collections present in the Botanical Garden of Ghent University.