Part B: Chair group specific regulations

December 12, 2023.

This document includes Chair Group specific information, the so-called Part B of the MSc thesis course guide (which is considered "Part A"). You can find this MSc thesis course guide as part of the university information site for the MSc thesis trajectory (and internship, and research practice) provided in SharePoint. See also the link: http://www.wur.eu/thesis-internship and check PART A (Course guides documents)

- Registration: Once you have agreed with a FEM supervisor to conduct your thesis at FEM, you should fill and sign in the FEM registration form. Usually, you will check this form with your supervisor before you send it to the secretary (Louise Altena). This action will involve you in the FEM group activities: you will get emails on FEM presentations and other FEM activities. Link: https://www.wur.nl/en/show/registration-form-fem-thesis.htm

- Course requirements: For the MSc courses and skills required for starting an MSc thesis at FEM, we refer to the description of "FEM80436 MSc Thesis Forest Ecology and Forest Management" in the study handbook. https://studyhandbook.wur.nl/modules/FEM80436

- Fieldwork abroad: For students doing field work abroad, for example in a tropical country, it is important to check the WUR travel policy document. Here for example you can read: "Whether employees or students, travellers to risky areas must be well prepared for the trip, for example by taking the Basic Safety and Security course: https://www.wur.nl/en/show/Course-basic-safety-security-.htm". In addition: "Students travelling to tropical or developing countries can also prepare for the trip by taking the courses Analysis and Prevention of Health Risks in the Tropics and Fieldwork in Conflict and Post-conflict Settings, ENT-50303 and SDC-51306 respectively." Discuss these requirements in advance with your supervisor.

- Travel insurance (please check recent information provided by WUR): The university provides a collective travel insurance to students who are travelling abroad if this travel is being conducted in the framework of their study programme. You can find all information on this website: https://www.wur.nl/en/education-programmes/current-students/financiele-ondersteuning/insurance.htm and choose 'Collective Travel Insurance'. For more information you should contact servicedesk.facilities@wur.nl .

  However, if a student has a Complete+ package at AON insurance company, such a travel is covered by this insurance. This insurance is mostly taken out by the university for non-European students. For more information about this insurance you may contact SSC again.

- Proposal presentation: In addition to the oral presentation to present your thesis once your research is completed, some supervisor may invite you to give a presentation on your proposal. Discuss this option with your supervisor.

- Fieldwork/other lab requirements: Discuss possible requirements for field work activities or visit to other labs with your supervisor. For example, formal permissions may be required for doing field work, and you need approval of your supervisor for working in other labs.

- Agreement on potential changes while carrying out the research project: Should unforeseeable circumstances occur, you will have to adapt your research proposal; any changes in planning must be discussed with and approved by your supervisor. We also advise that in case you are working at a different institution than WUR, your local supervisor should also approve the changes.

- Meetings: FEM organizes bi-weekly thesis rings that you are expected to join to improve the writing style and clarity of the proposal and final thesis. Contact your supervisor and/or thesis ring coordinator for information on the thesis ring. Moreover, you are supposed to attend scientific presentations at FEM, for example the weekly presentations by PhD or staff members on Tuesday morning at 9 a.m.

- Oral presentation: The maximum length of the final presentation is 12 minutes, with c. 10 additional minutes for discussion and feedback. The presentation should be given in English (even when the MSc-thesis itself will be written in Dutch), so that international students can participate in the discussion. We advise you to hold a trial presentation with your supervisor or fellow students as part of your preparation. At FEM, all presentations are scheduled on the first Tuesday of each month. Make an appointment with the secretary of the Forest Ecology and Forest Management group; Louise Altena (Lumen, louise.altena@wur.nl). The student needs to have approval from his/her supervisor to schedule his/her presentation. The student is also highly encouraged to attend all monthly Tuesday presentations during the course of her/his 6 months thesis.

- Research costs: Try to limit research costs and rely on existing administrative and logistic support as much as possible. When you expect additional costs, consult the supervisor about possibilities for financial support. FEM allows for research-based budget to support your thesis (max amount 600 euro), but discuss your budget with your supervisor in advance. These costs may involve lab analyses, logistics and/or transportation. Travelling and accommodation costs are generally assumed to be paid for by the student. The financial budget should be approved by the supervisor. Also consider organizing financial support from a funding organisation, but apply in advance (e.g. 4 months) because decision by these organisations take time.

- Data management: You should send all relevant information related to your thesis to your supervisor(s) and the secretary (louise.altena@wur.nl) via WeTransfer (or other online service), once you have concluded your MSc thesis and exam. We will store all this information on a special drive, under a unique number/code. For this, do the following:
  - Please create a main folder named: "AV" + academic year + _thesis number + -FirstName_LastName_ MScThesis, BScThesis or Internship (e.g. AV2020_04-Maria_Ribeiro_ MScThesis)
  - Inside this main folder, add 3 more folders and the Readme file?:
    - Folder " Data": put here all collected data, pictures taken, excel files, etc.
    - Folder "Report": put here your Proposal, powerpoint presentation, final report, posters, etc.

        - Folder “Scripts”: Put here all data analysis files, these include scripts and/or outputs in R, SPSS, ArcGIS, MaxEnt, etc.
        - Add the Readme.txt file, which is a Notepad file with a short description of the content from the folders. Contact the FEM secretary, Louise Altena, for a template for this.

- Detailed requirement for organising your proposal: a proposal consists of the following parts:
    - **Introduction consisting of Background and Problem statement:** This gives the background and motivation for the selection of the topic and a clear description of the problem field, finally resulting in a concise problem statement. This part includes a review of the theoretical and empirical literature, which is most relevant to the topic and ensures that your work advanced the current stage of knowledge. The theory acts as a base for further investigation and comparison with the (future) results. You must indicate *which* concepts are important to be looked at in answering the research questions.
    - **Research objective(s), questions, and hypotheses:** This clearly states the scientific objectives of the research. It is important that the objectives of the research are strictly related to the research topic. Subsequently, the research objective(s) should be translated into 1-3 research questions that need to be answered in order to fulfil the objective(s). Provide for each question clear and testable hypotheses, in which you also explain *why* you expect a certain relationship. If possible, include a conceptual model, in which the relations of the relevant concepts of the applied theories are presented in a graphical way.
    - **Research methods:** In this part of the proposal you explain *how* the research questions will be answered. You need to consider the following points: Identify the **character of the thesis work.** Will it be an explorative, a comparative, experimental or design study? What should be the final product: the description of a research object, a theory, the test of a hypothesis, a simulation model, a comparison of scenarios for future developments, a management plan, a design for a nature restoration plan?
    - Develop a **suitable *design*** for your experiments and observations and choose the methods for applying treatments and data collection. This step requires arguing about, and providing an answer to, questions like:
        - What is your *object* and what kind of *data* do you want from it?
        - What *methods* do you employ to derive the data? What kind of observations and measurements and how many replicates do

you need? In case of experimental work: of which factors do you want to test the effect on which response variables? How do you vary these factors? What is the experimental design?
    - Which *instruments* and *facilities* do you need? It is important to think about this far in advance, because not all equipment is available, or it can be in use elsewhere. Sometimes equipment needs to be borrowed from other groups. The following people take care of all fieldwork equipment and materials: Dr. Matthieu Decuyper.
- You should explicitly consider the reliability, validity and replicability of the results of your research.
- Design the **data analysis**: It should be pointed out that the description of the methods is necessary for *data collection* as well as for *data analysis*. How can the data be processed? Which statistical tests can be applied given the employed data collection methods or experimental design? Note that it is important to think about data analysis before you start to collect data. Certain analyses require certain data formats and experimental set-up.
- **Working plan and time schedule:** The research proposal finally should be completed by a comprehensive working plan, indicating the necessary steps in carrying out the research, as well as their logical order in time.
- You need to present a **financial plan**. The necessity of financial means to carry out the thesis work needs to be discussed and agreed between student and supervisor(s) before the actual thesis work starts.
- You need a data storage and sharing plan, an example can be found here.
- Discuss with your supervisor and arrange a place to work, a computer, lab place, sample storage, etc. Also make arrangements (reservations) for the transport facilities, or other logistical prerequisites (licences, etc.). Make prior arrangements with the laboratory staff if you need to use the laboratory facilities. These subjects should be part of your thesis contract. The same applies when working in a different institute than WUR.
- After you have completed your research proposal, you must provide a **short abstract** of your proposal to the web manager. This will be published on the web pages of the chair group.

- Detailed requirement for organising your thesis report: a thesis report consists of the following parts:
    - **Front page**: This is the cover of your thesis. It should mention the title of the research and the name of the author, names of the supervisors and their chair group or institute. The front page also needs to carry the logo of Wageningen University (and hosting institute if work is carried out elsewhere). You are free in designing the cover page.
    - **Title page**: This must be in the strict format as shown in Annex 3, containing:
        - Your full name (including all initials)
        - Title of the thesis research
        - Official code and name of the thesis-course
        - Name of the supervisor(s) and chair group or hosting institute
        - Date of publication (month, year)
        - The proper logo of the university**Table of contents:** An overview of the chapter structure of the thesis with their respective page numbers. It should also include the summary and annexes.
    - **List of tables and figures (optional):** The outline is followed by a list of tables and figures in the text, including their (short) titles and respective page numbers.
    - **Summary:** Provides a short (one page) comprehensive summary of the thesis. It contains justification, main research questions (and hypotheses), research design, the most salient results, interpretation, and the wider take home message that answers your question. This is the first thing that people will read, and it is very important that it is strong, crisp and clear.
    - **Introduction:** This part includes the problem statement, theoretical background, as well as the research questions, hypotheses, or objectives. In the introduction, you provide a review of the relevant literature and theoretical concepts, including a conceptual model, in which the relations of the relevant concepts of the applied theories are presented in a graphical way. Also indicate what your novel contribution is to the existing literature. You may finish this section with an outline of the structure of the subsequent chapters.
    - **Material and methods:** This part reports on the used information sources, the 'material' of your study (research area, plants or animals that you have used), as well as the applied methods and instruments for data collection and data analysis. (Note that 'material' is not the tools that you have used). Briefly explain and justify the design of your research: the experimental variables and the kind of data you have collected in order to answer the research questions. In contrast to the research proposal -where this section is presenting the

ambitions/ plan- you must present the situation as it has actually worked (incl. problems that occurred) in the final thesis report. When you have done experimental work, you should give all relevant details of the followed procedure (protocol). This enables others to evaluate your work, and to reproduce it if needed. In the case of fieldwork, you should describe the area and sites where the research was carried out. This may also be done in the next section. This section and the results are normally written in the past tense.

- **Results:** In this section the results should be presented in the most objective and comprehensive manner. Mixing results with subjective interpretation and discussion should be avoided. Avoid description in purely statistical terms, but use ecologically meaningful terms. The challenge is to structure the results in such a way that the research questions are addressed as best. Where appropriate, the findings should be illustrated or summarised with tables and figures. In any case tables and figures must be drawn in such a way that they can be read on their own, independent from the surrounding text. So make sure that you include legends to all tables and figures that can be read and understood stand alone. Do not forget to include measurement units and an explanation of abbreviations. Colour figures should be avoided. Use grey scales or textures instead. References to tables and figures should be made in the text (e.g., see table 1; cf. figure 2). Note that table captions are given above the table, whereas figure captions are placed below the figure.
- **Discussion:** The discussion section links your own findings, as presented in the result section, with those of others. What do your results mean and imply? You must discuss your findings in the background of the scientific objective(s) and research question(s), as well as in the light of the chosen theoretical framework. The challenge here is to argue for and against the findings and the related theoretical concepts. Literature references are therefore again a requisite in this section. You should also discuss to what extent the findings might have been influenced by the chosen methods, and possible flaws in your data. Structure the discussion in such a way that the research questions are answered and discussed. Do not forget to cite your results (by citing tables and figures). A common format of the discussion is that you start with a brief recap of your main questions and results. You can discuss the results in the same order of your research questions. Give each section a clear header that covers the content, so that the structure is clear. These headers should ideally reflect your research questions, so that for the reader it is clear where the answer to the question will be given. You can start each section with your hypothesis, then explain whether your results are in line with the hypothesis, and if not, why. Also include suggestions for

future research on this topic (theoretical framework and methods), and the practical application of the results (consequences for management and policy).

- **Conclusions:** This section brings together the most important findings and consequences of your research. These conclusions normally touch on the scientific objective and the research questions. Note that these aspects should already have been discussed in de discussion, and that the conclusions summarize your "take- home message". Do not bring in new components into the conclusions.
- **Bibliography:** It is very important that you give proper references when making statements form the literature. References acknowledge the work of others, and provide the reader with information on the sources that you used. In this section a list of *all* referred literature should be given, sorted in alphabetical order. Make your life easy by using a bibliographic programme like Endnote to make your reference list. The style for the different types of publications (articles in journals, books, chapters in books etc.) should be consistent. When you refer to information on the Internet you should give the complete web-address, as well as the date on which the information has last been accessed (e.g., Ministry of LNV, 2002: Forestry on paper. Public brochure downloadable at http://www.minlnv.nl/morepaper.pdf. Information derived on June 15th 2002). Sources from the internet are not always authorative and should be used sparingly. We strongly suggest you to use appropriate search engines for searching double refereed literature sources, such as Web of Science, Scopus, Biological Abstracts or Google Scholar.
- Note that texts can be copied only if one provides proper sources - if you quote other people's work, and if you use their own words, then you must put that text between quotation marks if that text is more than 12 words and you must provide the source. If not, you are infringing on copy right laws. The University will check your text for copying other people's work; copying without giving proper sources is considered fraudulent and if you are copying texts of others without giving proper references, the chair groups are obliged to report this to the Examining Board of the University. If the Board decided that fraudulent behaviour has been conducted by you, then this can have very serious consequences.
- **Annex/Appendix:** The annex should include information, which can be missed in the direct text body but is relevant for the understanding of the research or of important steps of it. This could mean for example: the inclusion of the original data, further detailed statistical analysis, etc. Note that also the annex pages should be numbered consistently with the general text.

- There is no fixed limit to the size of the thesis, but - as a general rule - the size should not exceed 40 pages, excluding annexes. It is also possible to write your thesis in the format of a scientific article, which is usually much shorter than a regular thesis report. Discuss this possibility with your supervisor. Any publication resulting from your thesis work will be done under the responsibility of the chair group, and needs approval of the chair group and the host institution (in case you carried out your research somewhere else) before being submitted for publication. The supervisor of the chair group is, as a rule, co-author of publications originating from the thesis work. The composition of the author list and the order of authors need to be approved by your supervisor.
- Different types of research (e.g., historical research, a literature review) might require a different chapter structure.