MSc Thesis Course Guide Wageningen University

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Additional information specific to programmes or chair groups is provided online (via Brightspace and/or webpages).

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Part A: Information about MSc theses at WU

1. General information

This course guide describes the procedures for the MSc thesis supervision and writing process for all chair groups of Wageningen University. This course guide applies to both compulsory and extra theses. It is meant for staff and students. It includes information about the goal of the thesis, the necessary procedures before starting and during the thesis, as well as the assessment procedure.

A separate course guide applies to the *Research Practice*. This is a thesis-like project with additional learning outcomes and related assessment criteria that – depending on the programme and individual arrangements made with the Examining Board – may be done instead of an internship.

Course profile

The MSc thesis enables the student to put their acquired knowledge and skills into practice by individually and independently conducting a research project within the scope of their programme.

Language: English
Credits: 30 - 39 EC (compulsory theses) or 24 - 33 EC (extra theses)*
Period: The start date of your thesis is determined in consultation with your thesis supervisor

* Most study programmes require a minimum of 36 credits for the compulsory thesis; see the Study Handbook for more information. As a guideline, a full-time thesis of 36 credits (EC) equals 24 weeks of 42 hours/week or 26 weeks of 40 hours/ week).
You may choose to include an extra thesis as part of the electives in your study programme. The extra thesis has a minimum size of 24 EC: 16 weeks of 42 hours/week or 17 weeks of 40 hours/week. Only in consultation with the thesis coordinator (of the chair group) and your study adviser, can you extend the length of your (compulsory) thesis to a maximum of 39 credits.

Specific requirements (e.g. mandatory courses) for each MSc thesis can be found in the online Study Handbook. Please check with your study adviser for any programme specific requirements. Finally, you should be officially registered as a Wageningen University MSc student.

Learning outcomes

After the successful completion of your MSc thesis, you are expected to be able to *independently* carry out the following aspects of a research project:
1. Develop a research plan, including: a description of the research topic in relation to the wider scientific context; an identification of the knowledge gap; formulation of research questions and/or a hypothesis, aims and objectives; an explanation of how you intend to conduct the research (e.g. in terms of a design for the project, data-collection and -analysis methods, research tools).
2. Collect, select and process data, using the design for the project, methods and tools described in the research plan.
3. Analyse and synthesise the data in order to answer the research questions and/or test the hypothesis.
4. Formulate answers to the research questions that are supported by the research outcomes; pay attention to potential limitations; critically discuss the outcomes in relation to the wider scientific and societal context.
5. Report on the research, both in writing and in oral presentation.

6. Work in compliance with academic codes of conduct and with proper management of time and resources.
7. Make use of input and feedback for executing the research project and provide feedback to others.

2. Preparation of your thesis

The supervision of your thesis is the responsibility of a Wageningen University chair group. Your study programme determines which chair groups are entitled to supervise your thesis project. Consult the description of your MSc programme in the Study Handbook and contact your study adviser to find out more about the chair group(s) allowed to supervise your thesis. If you find a thesis topic that does not meet these criteria, but which, in your opinion, is extremely relevant for your programme, you should contact your study adviser and ask for approval from the Examining Board.

People involved in your thesis

- The *thesis coordinator* is the contact person within the chair group. You can find thesis coordinators of each of the chair groups in the online Study Handbook of Wageningen University. The thesis coordinator appoints a supervisor and an examiner from the chair group.
- The *supervisor* is a staff member of the chair group and responsible for the supervision of your thesis. Especially in lab theses, the daily supervision often is delegated to a PhD student. Supervisors from external organisations cannot have a formal role and cannot be involved in the grading.
- The *examiner* will be the chair holder or another staff member appointed by the Examining Board. The examiner is responsible for the final grading.

How to find a thesis (topic)

There are differences between chair groups with regard to how theses should be found and arranged. In general, you can take the following steps:
- Attend a thesis information meeting, organised by your MSc programme or the chair group. In a few programmes, you need to participate in a thesis allocation procedure.
- Contact your study adviser to discuss the options for thesis subjects.
- Visit the Wageningen University websites of chair groups that are entitled to supervise an MSc thesis within (the specialisation of) your study programme.
- Find thesis subjects via the thesis database at WU-website (this database is still under construction).
- Make an appointment with the thesis coordinator of the chair group and discuss which thesis subject(s) you are interested in. Names of thesis coordinators can be found in the online Study Handbook.

The thesis subject should preferably match the overall research field of your programme. You must discuss both the topic and timing with your study adviser and the thesis coordinator of the chair group in a timely manner, especially if your thesis includes an experiment or field work abroad: this can sometimes take several months to arrange.

Learning Agreement

Before the thesis starts, you and your supervisor have to discuss and agree on the content of your thesis. The *Learning Agreement* (see overview of downloads in Appendix II) contains a description of the thesis topic, the agreements on supervision, planning, data management plan, evaluation moments, and (if applicable) risk assessment. You and your supervisor must discuss and sign the Learning Agreement. The Learning Agreement will be archived in OSIRIS.

Discuss possible confidentiality issues with your supervisor. In principle, your MSc thesis is not considered confidential, however, if part of your results is used in a larger research project, contract research or research that is subject to patenting, then confidentiality agreements may apply. You

should be informed by the thesis supervisor prior to starting if your thesis is part of a contract research programme or a patent procedure.

Discuss time, format and transfer of results and data with your supervisor as well (these are part of the data management plan) and include arrangements in the Learning Agreement. If the chair group uses a specific format for a data management plan, this is included in the chair group specific regulations in this course guide (Part B).

Information on WU travel policy, insurance and grants

Travel policy for students
Are you planning to travel abroad or, as an international student, are you temporarily travelling back home in the context of your studies at Wageningen University & Research? Find out in good time whether this trip concerns a **risky area** (source: Dutch Ministry of Foreign Affairs). If so, you will have to receive permission. If this is relevant to you, you should submit a **travel request** together with your thesis coordinator.

You will need to complete a form that also functions as a checklist to ensure that you are well-prepared for your trip. This checklist includes precautions to be taken – both mandatory and otherwise – such as travelling together with a student who is already familiar with the area, (additional WU) insurance, safety training, registration in Kompas (Foreign Affairs), and recommended vaccinations. You can find the form on the website mentioned below.
For actual information on travel policy WU, check the website:
https://www.wur.nl/en/Education-Programmes/Current-Students/Travel-policy-for-students.htm

Travel Insurance
Students participating in internships and/or conducting thesis work abroad as part of their study programme at the University are covered by the collective travel insurance of Wageningen University & Research. You do not need to pay to make use of this collective travel insurance. More information you can find here (heading Collective Travel Insurance):
https://www.wur.nl/en/Education-Programmes/Current-Students/Insurance.htm

Grants
There are some possibilities to apply for grants if your thesis, internship or research practice takes place in a foreign country, but most times the chance to receive a grant is small. For information about grants, see the following websites:
- https://www.wur.nl/en/Education-Programmes/Study-Abroad-and-Exchange-Students/Outgoing-from-Wageningen-University.htm
- http://www.beursopener.nl/content/index.asp (unfortunately in Dutch only)
- https://www.wur.nl/en/Education-Programmes/master/Study-grants.htm
- https://www.wur.nl/en/Education-Programmes/Current-Students/Travel-Funding.htm

3. Points of attention during the thesis

Supervision

Each chair group organises the appointment of supervisors differently. Contact the thesis coordinator of the respective chair group to check their specific procedure.

The first (main) supervisor is always a staff member of the responsible chair group, but sometimes, a second or even a third chair group may be involved in the supervision of an MSc thesis. In general, students are entitled to have regular meetings (e.g. every two or three weeks) with the primary supervisor. The actual frequency of meetings may vary depending on the nature of the thesis project. In order to make the meetings effective, the student needs to prepare for them, for example by preparing documents for the meeting (e.g. a chapter of the thesis or a list of discussion points) and by sending the document to the supervisor well in advance of the meeting. The supervisor, in turn, is expected to read the documents sent to them and to discuss them with the student during the meeting. As the thesis project is a learning experience, students are encouraged to act independently when resolving problems or in difficult situations. However, in cases of urgency, the supervisor should be available for feedback and support in between the regular meetings. Agreements on how to deal in such situations should be included in the Learning Agreement.

Ethical behaviour and plagiarism

Attention to scientific integrity is an important aspect of your academic education, including the various aspects that are relevant for an academic researcher. You always have to be aware of the fact that you could get into an ethical dilemma and you should be prepared if you run into such a situation. We refer to the Wageningen Code of Conduct for Scientific Practice (see Appendix I).

The main aspects described in this code concern:
- Scrupulousness: Scientific activities are performed scrupulously, unaffected by mounting pressure to achieve.
- Reliability: Science's reputation of reliability is confirmed and enhanced through the conduct of every scientific practitioner. A scientific practitioner is reliable in the performance of their research and in the reporting, and in the transferring of knowledge, through teaching and publication.
- Verifiability: Presented information is verifiable. Whenever research results are publicised, it is made clear what the data and the conclusions are based on, where they were derived from and how they can be verified.
- Impartiality: In their scientific activities, the scientific practitioner needs no other interest than the scientific interest. In this respect, they are always prepared to account for their actions.

A summary of the Wageningen Code of Conduct for Scientific Practice is given in Appendix I.

You are expected to be familiar with proper citing and referencing techniques before you start writing the thesis and are advised to consult relevant information available on the WUR-website (e.g. 'Citing and referencing'). Improper citing and referencing may be considered as plagiarism, which is a form of fraud. Staff are expected to screen all writings carefully for similarity with known sources; the University has made software available for this purpose. In case of suspicion of plagiarism, either of text, figures, models or data, the Examining Board will be informed. In the Rules and regulations of the Examining Board, procedures and sanctions regarding fraud are described.

Progress evaluation

The progress evaluation is a meeting between student and supervisor that takes place before you are

halfway through the project. It is up to the chair group if this meeting is scheduled right after the completion of the research proposal or later on, but should be agreed upon with the student in the Learning Agreement. In this meeting, all aspects of the thesis project at that point (i.e. research proposal, supervision, performance) are discussed. The principle of two-way feedback applies to the progress evaluation: if you have experienced any shortcomings in your supervision, then this is a good moment to discuss them and make agreements on potential improvements. In case of severe problems regarding your dedication, skills, knowledge or communication, your supervisor and the thesis examiner, may decide to terminate the thesis project. The outcome of the evaluation will be discussed with you and will be registered in OSIRIS afterwards.

The thesis assessment form and rubric can be used for the evaluation of the progress and provide a clear picture of what is going well and where improvement may be needed. If progress has not been achieved as planned due to reasons beyond your control (e.g. illness, problems in supervision), the plan for the rest of the project may need to be adjusted and new, feasible end goals defined.

Meetings

During your thesis period, you may participate in work discussions and other meetings of the chair group. Many chair groups have weekly work discussions in which research progress of all group members is discussed. Depending on the chair group, you may be asked to join the discussion group that is related to your research topic. Ask your supervisor when your chair group holds discussion sessions.

Both students and staff present their results to the other members of the chair group during colloquia. In general, students have to attend these colloquia.
Some chair groups organise literature discussions on papers that are relevant to their field, or organise seminars, during which guest researchers present their research or designs.

4. Thesis activities

This section describes the different stages of the thesis project in general terms. See Part B of the course guide for the specific requirements of your chair group.

Research proposal/ planning

At the start of the thesis, you will discuss the topic with your supervisor and read literature related to the project. After this initial orientation, you write a research proposal, which has to be discussed in depth with your supervisor(s). The research proposal should include a problem statement, research questions or a hypothesis that is supported by up-to-date literature related to the topic, an explicit and specific plan regarding how the research is to be conducted (e.g. study design, data collection and analysis methods) and a time schedule.
If drafted correctly, sections of the proposal can be used to write the final thesis report (e.g. the Introduction and Methodology sections). However, you cannot start conducting the research project before the research proposal has been approved by your supervisor(s).

When your proposal is completed, you may be asked to present your research proposal to other students and staff members in order to acquire feedback and suggestions for improvement. Discuss format and content for your presentation with your supervisor. The presentation should be given in English in order to allow international students and staff members to participate in the discussion.

Carrying out the research project

You should document your research activities, findings and sources carefully, including seemingly small details. During data collection, analysis and synthesis, you should follow the agreements made in the data management plan. In experimental research, a lab or field journal has to be kept.
You are recommended to keep in close contact with your supervisor throughout the 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.

Feedback

Dealing with feedback and providing feedback to others is one of the learning outcomes of the thesis. While carrying out your project and attending meetings, there will be ample opportunities for you to ask for and receive feedback from staff and students, and to give feedback to others as well. The chair group will request that you participate in thesis rings or other peer-learning sessions. Using this input will help you to further develop your knowledge, skills and attitude and make the best of your project.

Thesis report

Your research should result in a comprehensive, consistent and concise thesis report. It is important to realise that the thesis is not a chronological account of the project or a summary of the lab-journal. Furthermore, as good scientific writing dictates, the results should be properly organised and data should be correctly processed, analysed and presented. In principle, an MSc thesis report should contain all the elements of a full scientific paper in your discipline (see Part B for specific criteria for your chair group).
In some cases, it may be possible to write your thesis in the format of a scientific article, which is usually much shorter than a regular thesis report. Discuss this with your supervisor. Publication of the results of your research in proceedings or a scientific article is also possible. The supervisor of the chair group will generally be co-author of any publications originating from thesis work.
You usually get one possibility to discuss a draft report with your WU supervisor before handing in

the final report. In many chair groups it is common practice to discuss chapters separately in the final stage of the project.

Oral presentation (Colloquium)

Once your research has been completed, you are required to present your thesis and your major findings to other students and staff members of the chair group. Chair groups usually have a fixed schedule for these presentations. Appointments for a date, and the publication of the announcement should be made well in advance. You may discuss the structure and content of your presentation with your supervisor in advance so they can offer feedback and advice. The presentation must be in English so international staff and students can participate in the discussion.

Oral defence

The final oral defence is a discussion with your supervisor, the examiner and, in some cases, a supervisor from outside the chair group not involved in the grading of the thesis. The discussion focuses on the content of the thesis, in which your knowledge, understanding, insights, as well as creativity and scientific attitude are evaluated. You are expected to be able to place your results and conclusions in the wider context of the field of science. The oral defence will be scheduled ten working days after you have submitted your reports to the supervisor and examiner. You must make an appointment for the oral defence.

5. Completion of your thesis

Assessment of the thesis

For the Wageningen University assessment, supervisors/examiners use the Wageningen University Thesis Assessment Form (see Appendix II). The average grade for each category (performance, thesis project report, oral presentation (colloquium), oral defence) should be at least 5.5 for a pass.

The assessment strategy below shows the relation between the learning outcomes and the different parts of the assessment.

Weights		Description	Performance	Research Report	Oral presentation	Oral defence
			Assessment categories			
		% of grade	40%	50%	5%	5%
Learning outcomes	1	Develop a research plan, including: a description of the research topic in relation to the wider scientific context; an identification of the knowledge gap; formulation of research questions and/or a hypothesis, aims and objectives; an explanation of how you intend to conduct the research (e.g. in terms of a design for the project, data-collection and -analysis methods, research tools).	x	x		x
	2	Collect, select and process data, using the design for the project, methods and tools described in the research plan.	x	x		x
	3	Analyse and synthesise the data in order to answer the research questions and/or test the hypothesis.	x	x	x	x
	4	Formulate answers to the research questions that are supported by the research outcomes; pay attention to potential limitations; critically discuss the outcomes in relation to the wider scientific and societal context.	x	x	x	x
	5	Report on the research, both in writing and in oral presentation.	x	x	x	
	6	Work in compliance with academic codes of conduct, and with proper management of time and resources.	x	x		
	7	Make use of input and feedback for executing the research project and provide feedback to others.	x			
Assessors		Supervisor	x	x	x	x
		Examiner*		x	x	x

* The examiner will determine the final grading after a discussion with the supervisor/second assessor.

A rubric is used for feedback and grading (see Appendix II). After the examination, you will receive the reasoning behind your thesis grade, including specific feedback on all assessment categories. The final grade is administered in OSIRIS.

Delay and possibility to resit

The start and end date of your thesis are recorded in the Learning Agreement. There are a number of potential causes for delay in your thesis project: force majeure, functional disabilities or an insufficient result for your thesis.

In case of force majeure (circumstances beyond one's control) you can discuss an adjustment to your time schedule with your supervisor. Your supervisor can register an adjusted end date in OSIRIS.

In case of functional disabilities or other valid reasons for delay that are known beforehand, those should be mentioned at the start of the course. Your supervisor will only extend the regular duration of the project based on the advice of a student dean.

If you do not manage to complete a satisfactory final report before the end date recorded in the learning agreement, you may ask your supervisor for an extension of two months. Supervisors will extend the end date if they expect that you will be able to hand in a satisfactory report within these extra months. If you are not able to hand in a satisfactory report within two extra months, your WU supervisor and examiner can decide that you should start a new thesis. This new thesis does not necessarily need to have the same supervisor, chair group or be on the same subject. If you do start a new thesis, this is still considered as a resit.
If you and your WU supervisor disagree on your being able to pass the course in two extra months, and you do not get up to two months extension for finishing your thesis, you are able to send an appeal to the Examination Appeals Board. But ask your study adviser for advice first in this case; usually there are other possibilities to solve the issue.

Feedback on your thesis

Following the assessment, Wageningen University will send you a link to an online evaluation questionnaire. Please complete this, even if your thesis project is finished. The results of the questionnaires help us to improve the quality of the thesis supervision and organisation, and to identify potential (or actual) problems. The evaluation is anonymous.

Part B: Chair group specific regulations

The Water Systems and Global Change (WSG) group

The Water Systems and Global Change Group is a solution-oriented multidisciplinary research group focusing on water systems and global change. We aim to create new knowledge to contribute to sustainable water systems in a changing global environment.

Our teaching is focused on solution-oriented science for sustainable water system management under global change. We analyse and assess the impacts of climate and socio-economic changes on water systems and propose and test adaptation and mitigation strategies. We also develop water and climate services. To this end, we use simulation models, earth system observations, scenario analyses and field studies. Our thesis preparatory courses include Modelling Future Water Stress (WSG 35306), Climate Change Adaptation and Water Management (WSG-34806), Climate Smart Agriculture (WSG 35806), and Integrated Water Management (WSG-33806). You will find that these courses span a wide continuum ranging from natural science system dynamics modelling on one side to adaptation strategies and governance studies on the other side.

Thesis contact persons at the WSG group

Registration on Brightspace: Maartje Sijtsema maartje.sijtsema@wur.nl
Thesis student contact person/intake MIL: Maria del Pozo maria.delpozogarcia@wur.nl
Thesis student contact person/intake MES/MCL: Mengru Wang mengru.wang@wur.nl
Education and thesis coordinator: Nynke Hofstra nynke.hofstra@wur.nl
Thesis ring coordinator: Joreen Merks joreen.merks@wur.nl

All staff can be involved in supervision. Examiners are listed in the Study Handbook.

Thesis topic

Your thesis research is supposed to relate to our research field and must build upon theories, models and conceptual approaches you learned during the WSG thesis preparatory courses (see above). You are encouraged to choose either an existing topic from our list or propose your own topic. Topics are acceptable when they fit with the above description and when our supervising staff is confident that they have sufficient knowledge to support your research. Discuss the thesis topic in time with the contact person. This is particularly true, if you are planning to do a topic requiring fieldwork abroad as it often takes several months for arrangements to be made.

Supervision

The main supervisor is usually a staff member of the chair group. Co-supervision from another chair group is only allowed after agreement with the WSG contact person. In the thesis contract you have to state the agreements regarding supervision. You should frequently have contact with your supervisor (one meeting every 1-2 weeks during proposal writing and reporting), unless circumstances do not allow such a frequency. The actual frequency of meetings may vary depending on the nature of the thesis project. As the thesis project is a learning experience, the student is encouraged to act independently as much as possible in solving problems or difficult situations. However, one supervisor will always be available for feedback and support.

Thesis procedure

The thesis procedure is described in Table 1, with all the activities by the student and staff. Please stick to this protocol and

Table 1. WSG MSc thesis research protocol for students and staff

Phase	Student	Thesis coordinator	Supervisor	Examiner	WSG secretariat
Thesis preparation	Check tip.wur.nl (under WSG), also check that you have followed at least one of the thesis preparatory courses				
	Register as WSG thesis student with our secretariat (send email to maartje.sijtsema@wur.nl)				Allow student access to Brightspace thesis page
	Contact thesis contact person (Maria del Pozo (MIL) or Mengru Wang (MES/MCL)) to discuss options, or in case you decided upon a topic, go directly to the contact person mentioned on tip.wur.	Discuss thesis research options and refer to potential supervisors	Offer and discuss thesis research options		
	In case you want to travel abroad, please check regulations well in advance				
	Discuss and fill in a thesis learning agreement form		Discuss and signs the agreement		
	Complete data management plan after reading the WSG policy		Discuss data management plan		
	Send the finalized agreement and data management plan to the **thesis contact person**, **supervisor** and **secretary**				Register student, supervisor and examiner in OSIRIS. Archive the agreement.
Proposal (~4-6 weeks)	Do not start without a supervisor				
	Discuss when to attend the thesis ring with supervisor		Give advice on when to attend thesis ring		
	Write proposal. Regular discussions with supervisor		Support student in producing a thesis research proposal		
	Submit final proposal to supervisor				
	Discuss progress evaluation (go / no go decision) between 6-10 weeks after the start of the thesis.		Discuss progress evaluation + send result of 'go' to secretary and 'no go' to examiner	In case of 'no go': communicate with student, supervisor and terminate the registration. Send the progress evaluation to the secretary.	In case of 'go', register the result. In case of 'no go' archive the progress evaluation.
Research	Collect and analyse data or undertakes other research activities		Supervision		
	Carefully keep track of progress and data, ideally using a logbook.				
	Write report		Supervision		

During proposal and/or research phase:
*Enrol for and attend a **thesis ring** group of 4 meetings (see Brightspace for instructions)*
*Attend 6 or more **colloquia***

Finalisation (~2-4 weeks)	Submit a final draft thesis report to supervisor		Considers final draft enough for finalization		
	Agree on colloquium date with supervisor and communicate (together with a 200 word abstract) with secretariat		Colloquium date agreement		Send invitation with abstract for colloquium to staff and students
	Set exam date together with supervisors and examiner		Exam date agreement	Exam date agreement	
	Submit the final report to the plagiarism check in Brightspace		Check plagiarism test outcome		
	Send the final thesis report version one week ahead of the examination date to supervisor and examiner				
	Give a colloquium		Attend and evaluate quality. Give feedback to student.		
	Take attendance forms (thesis rings and colloquia) and the data (according to your data management plan) with you to the examination.				
	Thesis research and report defence and evaluation		Examination and quality assessment (using rubric and assessment form; see Brightspace). Discuss mark with student.	Examination and quality assessment (using rubric and assessment form). In case 1.5 point difference between supervisor and examiner: asks third person to evaluate	
			Send report + independent assessment forms of supervisor and examiner to secretary	Submit final assessment form and thesis report to OSIRIS. Tell secretary you have done so.	Archive report and Assessment forms. Register verzorgings-percentages in OSIRIS after examiner has submitted grade
	Archive data according to data management plan and send to supervisor together with Readme.txt file (see data management policy).		Archive data and thesis ring and colloquia attendance forms on the W-share.		

Red text: this will change once OSIRIS-Case is ready for use. Tip.wur will be replaced by new platform.

When presentations will be possible again in Lumen/Gaia, we will bring back the proposal presentations (start colloquia). Also, as long as presentations are online, we will not check the colloquia attendance forms.

The procedure is according to the general procedure as outlined in Part A of this course manual. Several items are specific for the WSG chairgroup:

- To **get registered on the WSG thesis Brightspace page**, please send an email to our secretary maartje.sijtsema@wur.nl. She will add you. On Brightspace you will find useful document, such as example thesis proposals, example theses, the data management policy of the WSG group, and links to useful forms.
- In addition to completing the thesis learning agreement, the student is also expected to think about **data management** before they start their thesis. The WSG data management plan is available on Brightspace, together with the form that needs to be submitted with the thesis learning agreement. After the thesis is finished, all data need to be submitted to the supervisor, together with a readme.txt file for which a template is also available on Brightspace. It is important to keep up with your work, data and files throughout your thesis, also with seemingly small details. This will also help you to put together all your files at the end of the thesis. You can therefore consider to keep a logbook. You can find guidelines for archiving of logbook, data and codes on Brightspace.
- Each student will need to attend one **thesis ring** group. The objective of the thesis ring is to improve the academic writing skills of the thesis students. One thesis ring group consist of four sessions. Each student is expected to submit text to two of these sessions. Thesis students need to decide with their supervisor on when is the best time for them to attend the thesis ring. Students going abroad need to contact the thesis ring coordinator before they start their thesis. Students cannot join a thesis ring group in the first 2-3 weeks of their thesis. Please carefully read the instructions and register on Brightspace (go to thesis information -> thesis ring).
- Each student will need to **attend 6 colloquia** where fellow students present their thesis. This is useful, as you will get a more broad understanding of the WSG field and experiences from others will help you to do your own thesis and prepare your own presentation. The student will collect signatures from the supervisors present at the colloquia using this form. *In the current situation with online colloquia, the presence is not checked, but please do attend presentation of your fellow students*. Colloquia are advertised by email.

Proposal writing and presentation

Usually, the student starts with a literature survey related to the subject of the project. Based on this a research proposal is written that will be thoroughly discussed with your supervisor and presented to in the thesis proposal presentations that take place once every two weeks on Thursday from 12:30-13:30. Students will have to register in the schedule on Brightspace at least one week before they want to do their presentation. *Proposal presentations are temporarily cancelled due to covid-19*.

The proposal should contain the following components: a description of the context of the proposed research, research objectives and a problem statement (including a description of what is the current state of knowledge and what the thesis is contributing to the existing scientific field), research questions, a description of the applied methodology, a time planning and a feasibility study. See Brightspace for an outline of the MSc thesis proposal.

If completed correctly, (part of) the proposal can be integrated into the final thesis report (e.g. in the Introduction and Methodology). Without approval of your supervisor and study advisor, you are not allowed to start carrying out the research project.

Dealing with personal data and ethics (social research)

When you conduct interviews, organize focus groups or use information from people in any way during your thesis, you have to be aware of the ethics involved. Firstly it is important to be aware of the sensitivity of personal information. Do not leave names, phone numbers, and email addresses of the people you are contacting lying around. Make sure they are stored on a secure flash drive or computer. Secondly, do not use personal titles and names in your thesis report, make sure your data are anonymized. If this is not possible for your research then you have to have explicit consent from the interviewee to make their title traceable. For instance, in case you interview the head of a water board, people will know who he/she is even when you do not use their name. So make sure that someone is not traceable OR that you have explicit consent for them to be traceable. Thirdly, make sure you have explicit consent to record interviews and use interview data in your research. You can do this by taking a consent form and letting the interviewee sign it and by asking them to agree to the recording both before you record and after you start the recording, so it is on tape. Discuss your plan on how to deal with research ethics and personal data with your supervisor. A template participant information sheet and consent form is available on Brightspace.

Thesis report

Your research project should finally result in a comprehensive, consistent and concise thesis report, with a maximum of 60 pages (including references, but excluding annexes). It is important to realise that the thesis is not a chronology of the project. Furthermore, there is no good scientific writing (see writing tips) without properly organising the results, presenting and processing the data, and data analysis. In principle an MSc thesis report should contain all elements of a full scientific paper in your discipline.

Under some conditions it is 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. It is important to consider adding a general introduction and reflection to the scientific article, for example to reflect on the use of your concept. This is particularly important for MIL students. See Brightspace for the general format of a scientific paper. Publication of the results of your research in proceedings or a scientific article is sometimes possible. The supervisor of the chair group will generally be co-author of publications originating from thesis work.

The supervisor will proof-read a draft version of your thesis report about one month before finalisation. He or she will give feedback and will assess whether the draft has enough quality to pass the examination.

Please make sure that you add the WSG MSc thesis front page and disclaimer to your report.

Referencing

You are expected to work with scientific literature (and sometimes secondary literature) in your thesis. For this you need to follow a consistent and acceptable reference style, both in your text and in your literature list. Some examples of often used reference styles are: APA, AMA, IEEE and Chicago. Of these IEEE and AMA are numbered reference styles while APA and Chicago are examples of author/year reference styles. It depends on you and your supervisor which style you prefer, but whichever style you choose, be consistent!

To make this a bit easies you can use a reference manager. Endnote and Mendeley are two commonly used reference managers. Mendeley is completely free and Endnote is free for students but not after you finish studying. These are software in which you can store and organize your references. Both have a plugin for your web browser (chrome and Firefox) which makes it easy to

download and store your scientific papers and other documents. They also have a plugin for Word so you can be consistent in your in-text referencing and you can create an automatic reference list in the preferred style. You can ask your supervisor, the WUR library or the thesis ring coordinator if you have any questions on referencing and the software

Oral presentation

When you and your supervisor have agreed on the final version of the thesis report you will have to give a final thesis presentation. This is an oral presentation of the major findings of your research to other MSc students and staff members of the chair group. Appointments for a date and the publication of the announcements should be made well in advance. Communicate the structure and contents of your presentation with your supervisor in advance, so he/she can give you feedback. The presentation should be given in English, so that international staff and students can participate in the discussion. Guidelines for giving oral presentations are available on Brightspace.

Oral examination

The final examination will be a discussion with your supervisor, a second reviewer/examiner and sometimes a supervisor from outside the chair group. The thesis will be evaluated, as well as understanding, creativity and scientific attitude you showed during the research. You are expected to be able to place your results and conclusions in the context of the field of science and to indicate the possibilities for application in practice. In addition, the grade of the thesis will be motivated including all aspects of the assessment. You should make the appointment for the examination well in advance.

Appendices

Appendix I: Summary of 'The Wageningen Code of Conduct for Scientific Practice'

The Wageningen Code of Conduct for Scientific Practice concerns principles of good scientific teaching and research, containing the Netherlands Code of Conduct for Research Integrity. The main aspects described in this code concern: Scrupulousness, Reliability, Verifiability, Impartiality, and Independence. See also: Netherlands Code of Conduct for Research Integrity

Scrupulousness: Scientific activities are performed scrupulously, unaffected by mounting pressure to achieve.
• Scrupulousness is expressed through precision and nuance in providing scientific instruction, conducting scientific research and the publishing of results thereof.
• Every scientific practitioner demonstrates respect for the people and animals involved in scientific teaching and research.
• Accurate source references serve to ensure that credit is awarded where credit is deserved. This also applies to information gathered online.
• Authorship is acknowledged. Rules common to the scientific discipline are observed.
• Scrupulousness is not restricted to the transfer of information, but also applies to relations among scientific practitioners and with students.
• Good mentorship is essential: a student and junior staff member are in a position of dependency. The responsibilities of persons involved in teaching and research are clearly defined and observed at all times.
• A scientific practitioner avoids personal relationships that may give rise to reasonable doubt concerning the objectivity of their decisions, or that may result in any form of coercion or exploitation of a hierarchically subordinate person.
• The assessment of study performance is based on explicit criteria that have been announced in advance. Teachers are prepared to explain every assessment, while students are sufficiently aware of the matter on which they will be assessed.
• A scientific practitioner ensures that they maintain the level of expertise required to exercise their duties. They do not accept duties for which they lack the necessary expertise. If necessary, they actively indicate the limits of their competence
• Damages, as a result of errors or negligence, are repaired to the best of one's ability.
• A scientific practitioner is responsible for the quality of the educational programme in which they provide instruction, and for the scientific and societal value of the research programmes in which they participate. They act according to their own preferences only insofar as they are reconcilable with this responsibility.

Reliability: Science's reputation of reliability is confirmed and enhanced through the conduct of every scientific practitioner. A scientific practitioner is reliable in the performance of their research and in the reporting, and equally in the transfer of knowledge through teaching and publication.
• The selective omission of research results is reported and justified. The statistical methods employed are pertinent to the acquired data.
• Speculation, spurred by results of scientific research, is recognisably presented as such. This does not include conclusions on the basis of the presented results. Suggestions for follow-up research may rest on speculation, in the form of an interpretation of the acquired results.
• The system of peer review can only function on the assumption that intellectual property is recognised and respected.
• A scientific practitioner provides a complete and honest overview of their skills whenever a decision concerning their career or duties is pending.

• In transferring information in education, a selective representation of available knowledge is either avoided or justified. A clear distinction is made between transferred knowledge and personal opinion or related speculation.

Verifiability: Presented information is verifiable. Whenever research results are publicised, it is made clear what the data and the conclusions are based on, what they were derived from and how they can be verified.
• Research must be replicable in order to verify its accuracy. The choice of research question, the research set-up, the choice of method and the reference to sources studied is accurately documented.
• The quality of data collection, data input, data storage and data processing are guarded closely. All steps taken must be properly reported and their execution must be properly monitored (through lab journals, progress reports, documentation of arrangements and decisions, etc.).
• Raw research data is stored for at least five years. This data is made available to other scientific practitioners on request.
• Raw research data is archived in such a way that it can be consulted with minimal expense of time and effort.
• The source of all educational material, including oral information transfer, is stated.

Impartiality: In their scientific activities, the scientific practitioner needs no other interest than the scientific interest. In this respect, they are always prepared to account for their actions.
• Scientific practitioners give others room to take their own intellectual stance. This applies particularly in case of a hierarchical relation, like the relation between a teacher and a student, or a tutor and a PhD student.
• The choice of methods and criteria is guided solely by the goal of truth-finding, and not by external goals, such as commercial success or political influence.
• A reviewer consults their conscience as to whether they can offer an impartial assessment of a manuscript, for instance when it concerns a competing research group.
• In assessing the performance of others (e.g. peer review in education, research and manuscripts), a scientific practitioner heeds arguments of scientific substance. They refrain from assessing a manuscript if they are in any way involved in the education or research concerned.
• A scientific practitioner only defends a certain scientific viewpoint if that viewpoint is based on sufficient scientific grounds. Competing viewpoints must be mentioned and explained.
• Exclusively assigning one's own study books in education is avoided, in any case at undergraduate level.
• In its annual report, every university reports on its registration of side activities by its staff. Every university registers the side activities relevant to scientific practice. Preferably, this register is made publicly accessible.
• Every scientific practitioner allied with a university provides their institution with an up-to-date overview of their side activities for registration purposes.

Independence: Scientific practitioners operate in the context of academic liberty and independence. Insofar as restrictions of that liberty are inevitable, these are clearly stated.
• Whenever a scientific practitioner is commissioned to provide instruction or conduct research, they are allowed – once the parameters have been defined – to execute the assignment without interference from the commissioning party. The research question is of interest to science, aside from the commissioning party's particular concern. The method employed is scientifically valid. The commissioning party has no influence on the research results.
• Commissioned assignments demonstrably contribute to scientific teaching or research.
• There is no ambiguity as to the identity of the commissioning party of the scientific activity, the relation between the commissioning party and the executing party, the existence of consultancy relations or other connections, etc.

• The publication of scientific research results is guaranteed. Arrangements with external financiers always stipulate that the scientific practitioner is at liberty to publish the results within a specified, reasonable period.

• External financiers of executed projects are identified by name. For research, this means that their names are stated in the publication; for education, this means that they are referred to in the course announcement and teaching material.

Appendix II: Downloads and links

- **Wageningen University MSc Thesis Learning Agreement**

The current version of the MSc Thesis Learning Agreement is available on the WUR website:
https://www.wur.nl/en/Education-Programmes/Student-Service-Centre/Show-ssc/Forms-Student-Service-Centre.htm

- **Assessment form and rubric**

The WU thesis assessment form and rubric will be used to grade your thesis after completion. We encourage you to look at the assessment criteria at the start of your project. You can download the most recent version of the assessment form and rubric from the Education & Student Affairs SharePoint site:
http://wur.eu/thesis-internship

- **Links to travel arrangements**

https://www.wur.nl/en/Education-Programmes/Current-Students/Travel-policy-for-students.htm
https://www.wur.nl/en/Education-Programmes/Current-Students/Insurance.htm

- **Guidelines and forms**

Our Brightspace site comprises all relevant guidelines and forms, also linked in this course manual. These include:
- Data management plan, with form to be submitted with learning agreement, guidelines for archiving a logbook, data and code, and a template for readme.txt file to be submitted with data at the end.
- Guidelines on the proposal outline, the format for a scientific paper, giving an oral presentation, on plagiarism and writing tips.
- Forms, including a participant information sheet and consent form for students doing interviews and/or focus groups, a colloquia attendance form and the MSc thesis front page with disclaimer.
- Examples of MSc thesis proposals and final theses
- Information on thesis proposal presentations *currently not in place*
- Information on the thesis rings