

Coordinator:

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Latest information and recent forms at:

<https://www.wur.nl/en/Research-Results/Chair-groups/Environmental-Sciences/Landscape-Architecture-and-Spatial-Planning-1/Education-LUP/BSc-thesis.htm>

BSc Thesis Spatial Planning (LUP 80812)

Language of instruction:	English/ Dutch
Study load:	12 ECTS
Components of the credits:	TH12
Period/time:	period 6 or period 1
Contact person:	Dr. ir. W. van der Knaap, (email: Wim.vanderKnaap@wur.nl)
Lecturers:	LUP-staff
Examiner:	dr M.M. Bakker
Examination:	BSc-Thesis report and reflection report
Type of written exam:	The assessment is based upon: - research report - reflection report
Mandatory knowledge:	Research Methodology in Human Environment Interactions (YRM-21306) Studio Participative Planning (LUP-30806) Minimal 102 credits of the prescribed part of the bachelor programme, including all credits of the first year.
Assumed knowledge:	PAP-20806 Public Administration and Environmental Law; LUP-24306 Concepts and Approaches in Planning Practices; LUP-35806 Mobility and Network Infrastructures; LUP-20306 Planning and Research Methods; LUP-37312 Studio Strategic Planning
Literature:	Options to be used are: <ul style="list-style-type: none">• Verschuren, P., Doorewaard, H. (2015). Het ontwerpen van een onderzoek (vijfde druk). Boom Lemma uitgevers Amsterdam. Paperback, ISBN: 9789462365070. 320 pagina's.• Verschuren, P., Doorewaard, H. (2013). Designing a research project (second revised edition). Boom Lemma uitgevers. Paperback, ISBN: 9789059315723. 312 pages.• Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams (2008). The Craft Of Research, Third Edition. ISBN: 9780226065663. 336 pages.• Kumar. R. (2014). Research Methodology. A step-by-step guide for beginners. Sage, London. Paperback. Fourth edition. ISBN: 9781446269978. 432 pages.

Profile of the course

The Bachelor Thesis finalises the major Spatial Planning from the BLP programme. With the BSc Thesis the student show that she/he is able to integrate and apply the knowledge and skills acquired during the BSc. The student has to delineate a research project that is focused on a practical or a scientific question, which after approval by the supervisor the research can be carried out by means of an empirical study which is either quantitative or qualitative by nature. The thesis subject should meet the required complexity for BSc-level and enable students to demonstrate not only BSc-level competences with regard to their academic knowledge and skills, but also that they can independently conduct the necessary study and bring it to a satisfactory conclusion. The results should be presented in a report and defended during a discussion with the supervisor and an examiner. If a student successfully passes the Bachelor Thesis (s)he have proven to be ready for the Master Program.

Subject of the thesis

The first step to be admitted to a bachelor thesis is that a check is made if the student can be admitted to the thesis trajectory via a meeting with the study advisor (see also under 'Mandatory Knowledge' for the requirements). This check should be made within period 4 if admission to period 6 is required or in period 6 if admission to period 1 is wanted. If the student passes this check (s)he can select a subject before the start of the BSc Thesis (when more subjects are offered). The research itself should be based on empirical observations, collected and analysed in a systematic manner. The thesis should meet the following criteria:

- The subject is relevant for spatial planning;
- The approach should be of sufficient complexity for BSc-level (see also learning outcomes);
- The subject and the intended approach should enable students to demonstrate BSc-level competences with regard to their academic knowledge and skills.

Learning outcomes

After successful completion of this course a student is expected to be able to:

- execute a landscape research under supervision, formulate a research proposal, extract research questions from a relevant societal problem and execute a literature review;
- identify relevant planning theories, approaches and practices;
- carry out an empirical analysis using appropriate methods;
- value the ethical implications of planning and design interventions in relation to themes such as gender, equity, multiculturalism and sustainability;
- give evidence of scientific curiosity and pro-activity;
- present the results of a research process both visually, orally and in text;
- express a critical attitude and reflect on personal thinking and action;
- work according to planning and be reliable, honest and incorruptible.

Mandatory Knowledge

Before starting the BSc Thesis Spatial Planning the student should have completed at least 102 credits of the prescribed part of the bachelor programme consisting of compulsory and restricted optional courses, including all 60 credits of the first year programme. As part of the 102 credits the student should also have successfully passed LUP-30806 Studio Participative Planning and YRM-21306 Research Methodology for Human Environment Interactions.

Furthermore the student must have knowledge of PAP-20806 Public Administration and Environmental Law; LUP-24306 Concepts and approaches in Planning Practices; LUP-35806 Mobility and Network Infrastructures; LUP-20306 Planning and Research Methods, LUP-37312 Studio Strategic Planning.

Educational activities

After being admitted to the bachelor thesis, the student has

- (i) to define the research problem and formulate research questions in a proper way,
- (ii) to deal with the planning and logistics of carrying out such an individual research project,
- (iii) to employ scientific methods for data collection and analysis, and
- (iv) to present the results in writing in a clearly organized report.

The BSc Thesis trajectory consists of several steps:

- 1) let the requirements be checked before you can start with the bachelor thesis and select a possible theme if offered the choice.
- 2) formulate a research proposal, including personal learning objectives in week 1 and week 2;
- 3) conduct the research (week 3-5) and present the results in a draft report (week 6-7);
- 4) finalise the report and reflect on the research process, the own disciplinary approach, and the personal learning objectives (week 7-8).

First step: let the requirements be checked before you start with the bachelor thesis and select a theme if offered the choice

Before you can start with the actual thesis work a meeting has to be held with the study advisor to determine if you are eligible to start. The requirements are mentioned under 'Mandatory Knowledge'. Take with you a copy of the bachelor thesis agreement (to be downloaded from the website; see also an example in appendix 1). By signing the bachelor thesis contract the study advisor gives a positive advise to start with the thesis. This signed agreement is handed over to the bachelor thesis coordinator. The agreement serves to lay down arrangements between a bachelor student and a chair group. The agreement registers rights and duties of both parties and is a further supplementation and elaboration of the Higher Education and Research Act (WHW), Education and Examining Regulations and the Student Charter. With the contract the student and supervisor acknowledge to be aware of these rights and duties, and will act according to the General Code of Conduct for Scientific Practice, as described in the introduction section. More information about the Student Charter can be found at the website of Wageningen University.

The start of the bachelor thesis is to select a theme out of several predefined themes and communicate about the first and second theme preference. The thesis coordinator will prepare the final groups per theme, based on a first or second preference.

After having received an admission for a theme-group the student has to prepare a first (rough) idea about the research (max 1 A4) and send it to the theme-supervisor. This has to be done two weeks before the start of the thesis.

Second step: research proposal (week 1 and week 2)

In the first part of the course, the student has to write a full research proposal. This proposal (approx. 2000 words) should contain the following aspects:

- An introduction of the subject, based upon a literature review, an analysis of the context and its societal and academic relevance, resulting in a clear set of research questions;
- Relevant conceptual/theoretical framework;
- An elaborated description of the method;
- Expected intermediate and final products;
- Time schedule;
- Individual learning objectives.

Third step: conduct the research (week 3 – 6/7)

In the second part of the course the student carries out his/her own research within a theme-group. There will be several group meetings organised to discuss progress and questions. Each group discussion of intermediate results can provide the students with the opportunity to learn from each other and to keep each other sharp. The result of the research can vary in character. The content of the report must meet the assessment criteria (see also appendix 2

assessment form. appendix 3 rubric overview, and a separate document in which a report layout is suggested). At the end of this step a first assessment will be made based on the draft version of the report to be submitted in week 7. There are several assessment options possible:

- If the draft is assessed sufficiently the student can finalise the report and a date for the examination can be set;
- If small changes or adaptations are required, the student can continue with finalizing the report and a date for the examination can be set;
- If major revisions are required an additional 4-6 weeks is offered to make these adjustments and then a date for the examination can be set;
- If the draft version is rejected but the student had shown enough commitment and perseverance, the student can start with a new subject in the next available period (either period 1 or period 6).

Fourth step: finalise the report and reflect on the research process (week 7 – 8)

The final report should be drawn up with the required or advised modifications as mentioned for the draft version. This final version will be assessed during the formal examination.

The reflection report should be based on:

- the progress of the research;
- the results of the research in relation to the original aim;
- the (personal) lessons learned about the subject and about conducting a research;
- the student's individual learning objectives and expectations.

It is advisable to keep a log during the research period, in which thoughts and events can be recorded. The reflection report (approx. 2000 words) must be handed in as the last appendix of the final report.

The finishing touch of the thesis work

After completion of the thesis work a hard copy of the thesis and the reflection report (as appendix) should be available for the supervisor and the second reviewer (staff member from the LUP group). A date must be set to have the final exam. The second reviewer should have the final report at least three working days before the final discussion will take place. The supervisor receives also a digital (PDF-)version of the thesis and the reflection document.

When no formal objections are known (including a plagiarism check) the thesis work can be assessed. The assessment consists of a short oral presentation (max 10 minutes) by the student of the thesis research in front of the supervisor and the second reviewer, followed by a discussion of the report and of the reflection paper. The second reviewer should be a qualified (planning) staff member and must be asked by the supervisor. At the end of this exam/discussion an evaluation form is drawn up, assessing the different categories (see also Assessment criteria – appendix 2 and rubric criteria in appendix 3). The student will be informed about the end-result.

The evaluation form is signed by the supervisor and the second reviewer and delivered at the office of the secretary (Gaia-building , room A221), after which the result is booked in the student administration. Also a digital copy of the thesis report is send over to the secretary. The examiner secures the reliability of the assessment, and signs the form. A digital copy of the signed evaluation form is send to the student and the coordinator.

Supervision

Students are free to select from different themes, supervised each by a staff member of the LUP-group. These supervisors can be assigned to a senior staff member, who will act as a counsellor and the second reviewer, if required. The senior staff member will also discuss the proposals with one of the supervisors and if needed with the student.

Students' responsibilities (check also "Overview of administrative steps")

Students should carry out the bachelor thesis independently, but they work together in a theme-group. The freedom to choose a subject within the limits of a theme also implies that the student is responsible for the collection of relevant literature, maps, data etc. The supervisor can give advice about ways to find the right sources of information. It is the students' responsibility to watch over the progress, to set the dates for meetings with the supervisor (with a maximum of one half hour a week) and to provide the supervisor in time with draft products and the final products.

Assessment Strategy

The BLP-program uses a standard evaluation form for the assessment of the bachelor thesis. Criteria for the assessment are: research competencies (45%), report (45%), presentation (5%) and final discussion (5%) (see also appendix 2). The criteria are further specified in a rubric overview (see appendix 3).

The thesis work is always graded by two assessors. Both assessors are present during the presentation and the final discussion of the thesis. The formal examiner is not personally involved in the thesis supervision and secures the reliability of the assessment.

The final report, including the reflection report as appendix, should be handed in not later than 8 weeks after the start of the thesis, based upon full-time work on the thesis. If the final work is assessed insufficiently (5 or lower) the student has one opportunity to improve it within 4-6 weeks. If this version is again insufficient the BSc Thesis has to be done again in the first period available for a thesis when there was sufficient efforts delivered, or a year later when no sufficient effort during the thesis process was delivered.

Please be aware that the University and the Chair group consider plagiarism as a major offence: it will exclude you from examination / graduation.

Code of conduct for Scientific Practice

In general, students are expected to act according to the General Code of Conduct for Scientific Practice. All universities in the Netherlands apply this code, which includes principles for good teaching and research. It is based on the following principles (www.vnsu.nl):

- honesty and scrupulousness
- reliability
- verifiability
- impartiality
- independence
- responsibility

Researchers, lecturers and students must respect this code and call each other to account on any questionable behaviour. When a violation of integrity is suspected, a complaint can be submitted to the scientific integrity committee of the university. The code can be downloaded (in Dutch and English) at the VNSU website (http://www.vnsu.nl/en_GB/netherlands-code-of-conduct-scientific-practice.html).

Proposed schedule of the course *) (check also the administrative steps below)

Week	Phase	Scheduled activities
Week 1	Write research proposal	Hand in draft research proposal Group Meeting: presentation, discussion and feedback on research plan
Week 2/3	Finalise research proposal	Hand in final version research proposal Discuss proposal with (senior) staff member
Week 3 - 6/7	Carry out research	There will be 2 group meetings scheduled during the research period to discuss progress and questions The student can meet occasionally with the supervisor to discuss specific questions Hand in draft version of the report at the end of week 6
Week 7	Finalise research	Discuss the draft report in a group meeting with the supervisor, address the comments and finalise the report; also draw up a reflection document
Week 8	Finalise report	Hand in final report and reflection document and schedule a meeting with the supervisor and the second reviewer to present and discuss the research and the report. Prepare a short oral presentation for the final examination (no PowerPoint required)

*) The time schedule can be adapted if the student decided to work part-time on the Thesis.

Overview of administrative steps

The following steps should be taken care of during the bachelor thesis process (underlined is the responsible person in that step).

- 1) The student gets the necessary administrative documents (contract, course guide and evaluation form) in the latest version from the website <https://www.wur.nl/en/Research-Results/Chair-groups/Environmental-Sciences/Landscape-Architecture-and-Spatial-Planning-1/Education-LUP/BSc-thesis.htm> or through other channels;
- 2) The study-advisor checks if the student meets the mandatory requirements by arranging a meeting with a student if required (the student must schedule an appointment no later than the first weeks of period 4). If the student passes the requirements the bachelor thesis contract is signed by the student and the study – advisor and handed over to the thesis-coordinator;
- 3) The student specifies a first and second preference for a thesis-theme to the bachelor thesis coordinator by e-mail;

- 4) Based on earlier mentioned preferences (first and second choice) the thesis-coordinator makes the theme-groups. The students will be informed about this.
- 5) The student draws up a first preliminary idea for a research topic (max 1 A4) and send it to the theme-supervisor a week before the start of the thesis.
- 6) When the thesis work is almost finished (or earlier if convenient) the second reviewer is contacted to set a date for the exam. This reviewer must be asked by the supervisor.
- 7) The student draws up a reflection document.
- 8) After completion of the thesis work the student sends a hard copy of the thesis and the reflection document to the second reviewer and the supervisor at least three working days before the exam date.
- 9) The thesis work will be formally assessed. This consists of a short oral presentation (around 5 minutes) by the student of the thesis research in front of the supervisor and the second reviewer, followed by a discussion of the report and of the reflection paper.
- 10) At the end of this exam/discussion an evaluation form is drawn up by the supervisor and the second reviewer, assessing the different categories and the comment section. The student will be informed about the end result. The evaluation form is signed by the supervisor and the second reviewer and a print version is delivered at the secretary (Gaia Building, room A221).
- 11) The supervisor also sends a digital version of the assessment form and a digital copy of the BSc-thesis to the secretary for storing it in the archive.
- 12) The examiner checks the form, and signs it. A digital copy of the signed evaluation form is send to the student, the supervisor and the coordinator.

Appendix 1 : Structure for a bachelor thesis contract (use the latest version from the website!)

WAGENINGEN UNIVERSITY BSc THESIS AGREEMENT

STATUS OF THE THESIS CONTRACT

- The thesis contract formalises the agreements made between the student and the department. In this sense, it is a further supplementation and elaboration of the rights and obligations that the parties already have based on the Higher Education and Research Act, the Education and Exam Regulations and the student statute.

FILL IN AND SIGN THE CONTRACT

- Before any thesis activities begin, this form must be filled in for all thesis courses and subject by the student. The student first needs approval of the study advisor to start with the thesis. After this approval the student can start discussions with a possible supervisor or thesis coordinator.
- The student, study advisor, and the supervisor must each sign a completed form. Each will receive a digital copy.
- After adding to and/or changing the contract, the student will be given a new copy.

1 GENERAL INFORMATION

Chair group : Land Use Planning

Student Registration. no. :

Study programme Spec.:

Study advisor:

Name of course : BSc thesis LUP Course code : LUP - 80812

1st Supervisor : Examiner :

2nd Supervisor : 2nd Evaluator :

2 PREREQUISITE SUBJECTS (according to EER, art 30a)

Minimal 102 credits of prescribed part of the bachelor programme, including all credits of first year,
Approval: yes / no

and mandatory prior knowledge from the following courses:

Code	Name	(Expected) Completion date
YRM - 21306	Research methodology
LUP - 30806	Studio Participative Planning

plus assumed knowledge of additional courses – PAP-20806 Public Administration and Environmental Law, LUP-24306 Concepts and Approaches in Planning Practices, LUP-35806 Mobility and Network Infrastructures, LUP-20306 Planning and Research Methods, LUP-37312 Studio Strategic Planning

3 GENERAL DESCRIPTION AND PLANNING SCHEME FOR THE THESIS

Subject:

Planned starting date : Special circumstances concerning planning:

Planned completion date :

Intensity : ... hours / week

4 Admission to the thesis

Study advisor has stated that the student has met all requirements for starting with this bachelor thesis and that the specified thesis is part of the programme of the student.

SIGNING THE AGREEMENT

Wageningen	<u>Study advisor</u>	<u>Student</u>	<u>Supervisor</u>	<u>Examiner</u>
[date]

Appendix 2 : Assessment form (use the latest version of the excel sheet from the website!)

BSC Thesis evaluation Wageningen University			
Fill out the single lined fields. Use a comma or a point as decimal sign, depending on the language chosen.			
Name chair group	Land Use Planning	Free Percentage per Chairgroup	
Name student		LUP	100%
Registration number		chair group (initials)	0%
Study programme		chair group (initials)	0%
Specialisation		Sum	100%
Code thesis	LUP - 80812		
Short title thesis			
Country of research			
Date examination		Signature	
Supervisor chair group			
Supervisor outside chair group (if so)			
Second reviewer chair group			
Examiner			
		grading mark 1-10	relative weight
A) Research competence (45%)			45%
1 Initiative, pro-activity and creativity			0.00
2 Commitment and perseverance			
3 Time management			
4 Critical and self-reflective capacity			
5 Handling supervisors comments			
6 Analysis and processing (literature) data			
B) Thesis report (45%)			45%
1 Problem definition & research set-up			0.00
2 Theoretical underpinning and use of literature			
3 Description methods and analysis (literature) data			
4 Clarity of argumentation and conclusions			
5 Critical discussion			
6 Writing skills incl. correct quoting			
C) Presentation (5%)			5%
1 Graphical presentation			0.0
2 Verbal and non-verbal presentation and defence			
D) Final discussion (5%)			5%
1 Defence of the thesis			0.0
2 Knowledge of study domain			
TOTAL			0.00
FINAL GRADE			0.0

Minimum 20% is for LUP (see also below *).

Country / countries where most of the empirical data is about.

***) Supervision and funding arrangements**

20% of the available funding for a BSC-thesis supervision is set aside for administration, coordination and examination purposes (see also right hand corner assessment form). This is the minimum percentage for the LUP-group. When a supervisor outside the Land Use Planning group, but within Wageningen University, is the main supervisor only a maximum of 80% of the funding is available for his/her supervision (fill in the right chair group-code in the right hand corner of the assessment form).

Appendix 3 : Rubric overview

Rubric for assessment of BSc-thesis LUP80812 (in combination with BSc Thesis evaluation form)

Author: W. van der Knaap, based on "Rubric for assessment of MSC-thesis_1.1 document" - Wageningen University

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Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<i>A. Research competence (45%)</i>						
A.1. Initiative, pro-activity and creativity	Student shows no initiative or new ideas at all.	Student picks up some initiatives and/or new ideas suggested by others (e.g. supervisor), but the selection is not motivated.	Student shows some initiative and/or together with the supervisor develops one or two new ideas on minor parts of the research.	Student initiates discussions on new ideas with supervisor and develops one or two own ideas on minor parts of the research.	Student has his own creative ideas on hypothesis formulation, design or data processing.	Innovative research methods and/or data-analysis methods developed. Possibly the scientific problem has been formulated by the student.
A.2. Commitment and perseverance	Student is not motivated. Student escapes work and gives up regularly	Student has little motivation. Tends to be distracted easily. Has given up once or twice.	Student is motivated at times, but often, sees the work as a compulsory task. Is distracted from thesis work now and then.	The student is motivated. Overcomes an occasional setback with help of the supervisor.	The student is motivated and/or overcomes an occasional setback on his own and considers the work as his "own" research.	The student is very motivated, goes at length to get the most out of the research.. Takes complete control of his own research. Considers setbacks as an extra motivation.
A.3. Keeping to the time schedule	Final version of thesis more than 50% of the nominal period overdue without a valid reason (force majeure)	Final version of thesis at most 50% of the nominal period overdue (without a valid reason).	Final version of thesis at most 25% of nominal period overdue (without valid reason)	Final version of thesis at most 10% of nominal period overdue (without valid reasons)	Final version of thesis at most 5% of nominal period overdue (without valid reasons)	Final version of thesis finished within planned period (or overdue but with valid reason).
	No time schedule made.	No realistic time schedule.	Mostly realistic time schedule, but no timely adjustment of time schedule.	Realistic time schedule, with some adjustments (but not enough or not all in time) in times only.	Realistic time schedule, with timely adjustments of times only.	Realistic time schedule, with timely adjustments of both time and tasks.
A.4. Critical and self-reflective capacity	The student can only perform the research properly after repeated detailed instructions and with direct help from the supervisor.	The student needs frequent instructions and well-defined tasks from the supervisor and the supervisor needs careful checks to see	The supervisor is the main responsible for setting out the tasks, but the student is able to perform them mostly independently.	Student selects and plans the tasks together with the supervisor and performs these tasks on his own.	Student plans and performs tasks mostly independently, asks for help from the supervisor when needed.	Student plans and performs tasks independently and organizes his sources of help independently.

Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
		if all tasks have been performed.				
	No critical self-reflection at all.	No critical self-reflection at all.	Student is able to reflect on his functioning with the help of the supervisor only.	The student occasionally shows critical self-reflection.	Student actively performs critical self-reflection on some aspects of his functioning.	Student actively performs critical self-reflection on various aspects of his own functioning and performance.
A.5. Handling supervisor's comments and development of research skills	Student does not pick up suggestions and ideas of the supervisor.	The supervisor needs to act as an instructor and/or supervisor needs to suggest solutions for problems.	Student incorporates some of the comments of the supervisor, but ignores others without arguments.	Student incorporates most or all of the supervisor's comments.	Supervisor's comments are weighed by the student and asked for when needed.	Supervisor's comments are critically weighed by the student and asked for when needed, also from other staff members or students.
	Knowledge and insight of the student (in relation to the prerequisites) is insufficient and the student is not able to take appropriate action to remedy this.	There is some progress in the research skills of the student, but suggestions of the supervisor are also ignored occasionally.	The student is able to adopt some skills as they are presented during supervision.	The student is able to adopt skills as they are presented during supervision and develops some skills independently as well.	The student is able to adopt new skills mostly independently, and asks for assistance from the supervisor if needed.	The student has knowledge and insight on a scientific level, i.e. he explores solutions on his own, increases skills and knowledge where necessary.
A.6. Efficiency in working with data and concepts Note: depending on the characteristics of the thesis work, not all three aspects (data collection/ experimental work, spatial concepts, data analysis, and model development) may be relevant and some may be omitted	Data collection/ Experimental work	Student is able to execute detailed instructions to some extent, but errors are made often, invalidating (part of) the data collection/experiment.	Student is able to execute a data collection/experiment that has been designed by someone else (without critical assessment of sources of error and uncertainty).	Student is able to execute a data collection/experiment that has been designed by someone else. Takes sources of error and uncertainty into account in a qualitative sense.	Student is able to judge the setup of an existing data collection/experiment and to include modifications if needed. Takes into account sources of error and uncertainty quantitatively.	Student is able to setup or modify a data collection/ experiment exactly tailored to answering the research questions. Quantitative consideration of sources of error and uncertainty. Execution of the experiment is flawless.
	Student is not able to setup and/or execute an experiment in order to collect data, either by field work or experiments, literature research, observations and/or interviews.					
	Spatial Concepts	Student can describe a spatial concept linked to the research question.	Student can interpret a spatial concept related to the research question.	Student is able to interpret and apply a spatial concept that contribute to the research question.	Student is able to apply a spatial concept, determine some pros and cons in relation to the research question.	Student is able to perform a thorough check on the spatial concept and add new elements to it.
	Student is lost when using a spatial concept. Is not able to use an appropriate concept if required.					

Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
	Data analysis	Student is able to organize the data, but is not able to perform checks and/or simple analyses.	Student is able to organize data and perform some simple checks; but the way the data are used does not clearly contribute to answering the research questions and/or he is unable to analyse the data independently.	Student is able to organize the data, perform some basic checks and perform basic analyses that contribute to the research question.	Student is able to organize the data, perform commonly used checks and perform some advanced analyses on the data.	Student is able to organize the data, perform thorough checks and perform advanced and original analyses on the data.
	Student is lost when using data. Is not able to use an appropriate data-processing program if required.					
	Model development	Student modifies an existing model, but errors occur and persist. No validation.	Student is able to make minor modifications (say a single formula) to an existing model. Superficial validation or no validation at all.	Student is able to make major modifications to an existing model, based on literature. Validation using some basic measures of quality.	Student is able to make major modifications to an existing model, based on literature or own analyses. Validation using appropriate statistical measures.	Student is able to develop a model from scratch, or add an important new part to an existing model. Excellent theoretical basis for modelling as well as use of advanced validation methods.
	Student is not able to make any modification/addition to an existing model.					
<i>B. Thesis report (45%)</i>						
B.1. Problem definition and research set-up	No link is made to existing research on the topic. No research context is described.	The context of the topic at hand is described in broad terms but there is no link between what is known and what will be researched.	The link between the thesis research and existing research does not go beyond the information provided by the supervisor.	Context of the research is defined well, with input from the student. There is a link between the context and research questions.	Context of the research is defined sharply and to-the-point. Research questions emerge directly from the described context.	Thesis research is positioned sharply in the relevant scientific field. Novelty and innovation of the research are indicated.
	There is no researchable research question and the delineation of the research is absent.	Most research questions are unclear, or not researchable and the delineation of the research is weak.	At least either the research questions or the delineation of the research are clear.	The research questions and the delineation are mostly clear but could have been defined sharper at some points.	The research questions are clear and researchable and the delineation is clear.	The research questions are clear and formulated to-the-point and limits of the research are well-defined.
B.2. Theoretical underpinning and use of literature	No discussion of underlying theory.	There is some discussion of underlying theory, but the description shows serious errors.	The relevant theory is used, but the description has not been tailored to the research at hand or shows occasional errors.	The relevant theory is used, and the description has been tailored partially successful to the research at hand. Few errors occur.	The relevant theory is used, it is nicely synthesized, and it is successfully tailored to the research at hand.	Clear, complete and coherent overview of relevant theory on the level of an up-to-date review paper. Exactly tailored to the research at hand.

Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
	No peer-reviewed/primary scientific papers in reference list except for those already suggested by the supervisor.	Only a couple of peer-reviewed papers in reference list.	Some peer-reviewed papers in reference list but also a significant body of grey literature.	Relevant peer-reviewed papers in reference list but also some grey literature or text books. Some included references are less relevant.	Mostly peer-reviewed papers or specialized monographs in reference list. An occasional reference may be less relevant.	Almost exclusively peer-reviewed papers in reference list or specialized monographs (not text books). All papers included are relevant.
B.3. Description methods and analysis (literature) data	No description of methods and/or data.	Research is not reproducible due to insufficient information on data (collection and/or treatment) and analysis methods.	Some aspects of the research regarding data-collection, data-treatment, models or the analysis methods are described insufficiently so that that particular aspect of the research is not reproducible.	Description of the data (collection, treatment) or models as well as the analysis methods used is lacking in a number of places so that at most a more or less similar research could be performed.	Description of the data (collection, treatment) or models as well as the analysis methods used is mostly complete, but exact reproduction of the research is not possible due to lack of some details.	Description of the data (collection, treatment) or models as well as the analysis methods is complete and clear so that exact reproduction of the research is possible.
B.4. Clarity of argumentation, conclusions and recommendations	No link between research questions, results and conclusions.	Conclusions are drawn, but in many cases these are only partial answers to the research question. Conclusions merely repeat results.	Conclusions are linked to the research questions, but not all questions are addressed. Some conclusions are not substantiated by results or merely repeat results.	Most conclusions are well-linked to research questions and substantiated by results. Conclusions are mostly formulated clearly but with some vagueness in language.	Clear link between research questions and conclusions. All conclusions are substantiated by results. Conclusions are formulated exact.	Clear link between research questions and conclusions. Conclusions are substantiated by results. Conclusions are formulated exact and concise. Conclusions are grouped/ ordered in a logical way.
	No recommendations given.	Recommendations are vague or trivial.	Some recommendations are given, but the link of those to the conclusions is not always clear.	Recommendations are well-linked to the conclusions.	Recommendations are to-the-point, well-linked to the conclusions and original.	Recommendations are to-the-point, well-linked to the conclusions, original and are extensive enough to serve as research description for a new thesis research.
B.5. Critical reflection on the research performed (discussion)	No discussion and/or reflection on the research. Discussion only touches trivial or very general points of criticism.	Only some possible weaknesses and/or weaknesses which are in reality irrelevant or non-existent have been identified.	Most weaknesses in the research are indicated, but impacts on the main results are not weighed relative to each other.	Most weaknesses in the research are indicated and impacts on the main results are weighed relative to each other.	All weaknesses in the research are indicated and weighed relative to each other. Furthermore, (better) alternatives for the methods used are indicated.	Not only all possible weaknesses in the research are indicated, but also it is indicated which weaknesses affect the conclusions most.

Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
	No confrontation with existing literature.	Confrontation with irrelevant existing literature.	Only trivial reflection vis-a-vis existing literature.	Only most obvious conflicts and correspondences with existing literature are identified. The value of the study is described, but it is not related to existing research.	Minor and major conflicts and correspondences with literature are shown. The added value of the research relative to existing literature is identified.	Results are critically confronted with existing literature. In case of conflicts, the relative weight of own results and existing literature is assessed. The contribution of the work to the development of scientific concepts is identified.
B.6. Writing skills, including correct quoting	Thesis is badly structured. In many cases information appears in wrong locations. Level of detail is inappropriate throughout.	Main structure incorrect in some places, and placement of material in different chapters is illogical in many places. Level of detail varies widely (information missing, or irrelevant information given).	Main structure is correct, but lower level hierarchy of sections is not logical in places. Some sections have overlapping functions leading to ambiguity in placement of information. Level of detail varies widely (information missing, or irrelevant information given).	Main structure correct, but placement of material in different chapters is illogical in places. Level of detail is inappropriate in a number of places (irrelevant information given).	Most sections have a clear and unique function. Hierarchy of sections is mostly correct. Ordering of sections is mostly logical. All information occurs at the correct place, with few exceptions. In most places level of detail is appropriate.	Well-structured: each section has a clear and unique function. Hierarchy of sections is correct. Ordering of sections is logical. All information occurs at the correct place. Level of detail is appropriate throughout.
	Formulations in the text are often incorrect/inexact inhibiting a correct interpretation of the text.	Vagueness and/or inexactness in wording occur regularly and it affects the interpretation of the text.	The text is ambiguous in some places but this does not always inhibit a correct interpretation of the text.	Formulations in text are predominantly clear and exact. Thesis could have been written more concisely.	Formulations in text are clear and exact, as well as concise.	<i>Textual</i> quality of thesis (or manuscript in the form of a journal paper) is such that it could be a basis for a peer-reviewed journal.
<i>C. Presentation (5%)</i>						
C.1. Graphical presentation (not always applicable)	Presentation has no structure.	Presentation has unclear structure.	Presentation is structured, though the audience gets lost in some places.	Presentation has a clear structure with only few exceptions.	Presentation has a clear structure. Mostly a good separation between the main message and side-steps.	Presentation clearly structured, concise and to-the-point. Good separation between the main message and side-steps.
	Unclear lay-out. Unbalanced use of text, graphs, tables or graphics throughout. Too small font size, too many or too few slides.	Lay-out in many places insufficient: too much text and too few graphics (or graphs, tables) or vice versa.	Quality of the layout of the slides is mixed. Inappropriate use of text, tables, graphs and graphics in some places.	Lay-out is mostly clear, with unbalanced use of text, tables, graphs and graphics in few places only.	Lay-out is clear. Appropriate use of text, tables, graphs and graphics.	Lay-out is functional and clear. Clever use of graphs and graphics.

Assessment Item	Mark for item					
	2-3	4-5	6	7	8	9-10
C.2. Verbal and non-verbal presentation	Spoken in such a way that majority of audience could not follow the presentation.	Presentation is uninspired and/or monotonous and/or student reads from slides: attention of audience not captured	Quality of presentation is mixed: sometimes clear, sometimes hard to follow.	Mostly clearly spoken. Perhaps monotonous in some places.	Clearly spoken.	Relaxed and lively though concentrated presentation. Clearly spoken.
	Level of audience not taken into consideration at all.	Level of audience hardly taken into consideration.	Presentation not at appropriate level of audience.	Level of presentation mostly targeted at audience.	Level of presentation well-targeted at audience. Student is able to adjust to some extent to signals from audience that certain parts are not understood.	Clear take-home message. Level well-targeted at audience. Student is able to adjust to signals from audience that certain parts are not understood.
	Bad timing (way too short or too long).	Timing not well kept (at most 30% deviation from planned time).	Timing not well kept (at most 20% deviation from planned time).	Timing is OK (at most 10% deviation from planned time).	Timing is OK.	Presentation finished well in time.
D. Examination (5%)						
D.1. Defence of the thesis	Student is not able to defend/discuss his thesis. He does not master the content.	The student has difficulty to explain the subject matter of the thesis.	Student is able to defend his thesis. He mostly masters the contents of what he wrote, but for a limited number of items he is not able to explain what he did, or why.	Student is able to defend his thesis. He masters the contents of what he wrote, but not beyond that. Is not able to place thesis in scientific or practical context.	Student is able to defend his thesis, including indications where the work could have been done better. Student is able to place thesis in either scientific or practical context.	Student is able to freely discuss the contents of the thesis and to place the thesis in the context of current scientific literature and practical contexts.
D.2. Knowledge of study domain	Student does not master the most basic knowledge (even below the starting level for the thesis).	The student does not understand all of the subject matter discussed in the thesis.	The student understands the subject matter of the thesis on a textbook level.	The student understands the subject matter of the thesis including the literature used in the thesis.	Student is well on top of subjects discussed in thesis: not only does he understand but he is also aware of current discussions in the literature related to the thesis topic.	Student is well on top of subjects discussed in thesis: not only does he understand but he is also aware of discussions in the literature beyond the topic (but related to) of the thesis.