A1) General research competencies					
1. Initiative, proactive approach, and creativity					
1-3	4-5	6	7	8	9-10
Student shows no initiative or ideas at all.	Student picks up some initiatives and/or 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 ideas on minor parts of the research.	Student initiates discussions on 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.	Student develops innovative hypotheses, research methods and/or data-analysis methods.
2. Commitment and perseverance					
1-3	4-5	6	7	8	9-10
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" project.	The student is very motivated, goes at length to get the most out of the project.
3. Proposal					
1-3	4-5	6	7	8	9-10
Student is not able to set up proposal or understand proposal from supervisor	Proposal is set up but contains many logic errors even with direct help of supervisor.	Student can explain proposal set up with direct help of supervisor.	Set up proposal correct with direct help of supervisor.	Set up proposal correct after detailed instruction by supervisor.	Set up proposal correct after global instruction by supervisor.
4. Time management					
1-3	4-5	6	7	8	9-10
No planning is made.	Planning is without any detail, not feasible and backup strategies are lacking.	Planning is somewhat concrete but not feasible and backup strategies are lacking.	Planning is quite concrete, but some aspects of the planning are not feasible and backup strategies are insufficient.	Planning is quite concrete and feasible, but backup strategies are insufficient.	Planning is concrete and feasible and backup strategies are sufficient.
Final version of BSc-thesis or presentation hugely overdue (without a valid reason).	Final version of BSc-thesis or oral presentation at one-two months overdue (without a valid reason).	Final version of BSc-thesis or oral presentation at most a month overdue (without valid reason).	Final version of BSc-thesis or oral presentation at most two weeks overdue (without valid reasons).	Final version of BSc-thesis or oral presentation at most one week overdue (without valid reasons).	Final version of BSc-thesis or oral presentation finished within planned period.
5. Critical and self-reflective capacity					

1-3	4-5	6	7	8	9-10
Student doesn't realize the occurrence of strengths and weaknesses of the research (plan).	Student is not able to point out strengths and weaknesses of the research (plan).	Student is able to point out some strengths and weaknesses of the research (plan).	Student is able to point out many of the strengths and weaknesses of the research (plan).	Student is able to point out most of the strengths and weaknesses of the research (plan).	Student is able to point out most of the strengths and weaknesses of the research (plan) and is able to give some constructive suggestions for improvement.
6. Handling supervisor's comments					
1-3	4-5	6	7	8	9-10
Student does not pick up suggestions and ideas of the supervisor.	The supervisor needs to act as an instructor and constantly 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 weighted 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.
7. Processing and analysing data: a) experimental work, b) data analysis, c) model development, d) literature analysis. Only assess those criteria that are relevant for the BSc-thesis of the student.					
1-3	4-5	6	7	8	9-10
a) Experimental work Student is not able to setup and/or execute an experiment.	Student is able to execute detailed instructions to some extent, but errors are made often, invalidating (part of) the experiment. Every single step has to be supervised.	Student is able to execute an experiment that has been designed by someone else (without critical assessment of sources of error and uncertainty). Check of supervisor is necessary.	Student is able to execute an 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 experiment and to include modifications if needed. Takes into account sources of error and uncertainty quantitatively.	Student is able to setup or modify an experiment exactly tailored to answering the research questions. Quantitative consideration of sources of error and uncertainty. Execution of the experiment is flawless.
b) Data analysis Student is lost when using data. Is not able to use a spread sheet program or any other appropriate data-processing program.	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 of 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.
c) Model development	Student is able to make	Student is able to make	Student is able to make	Student is able to make	Student is able to

Student is not able to make any modification/addition to an existing model.	minor modifications to an existing model, but errors occur and persist. No validation.	minor modifications (e.g. a single formula) to an existing model. Superficial validation.	major modifications to an existing model, based on literature. Validation using some basic measures of quality.	major modifications to an existing model, based on literature or own analyses. Validation using appropriate statistical measures.	develop a model from scratch, or add an important new part to an existing model. Excellent theoretical basis for modeling as well as use of advanced validation methods.
d) Literature analysis Student is not able to organize literature and come to a synthesis.	Student is able to organize the literature, but is not able come to a synthesis that results in own insights, hypotheses or conclusions independently.	Student is able to organize literature and comes to a synthesis that results in own insights, hypotheses or conclusions; but the way the literature is used does not clearly contribute to answering the research questions	Student is able to organize literature and comes to a synthesis that results in own insights, hypotheses or conclusions which contribute to the research question.	Student is able to organize literature and critically evaluates the quality of his literature sources. He comes to a synthesis that results in own insights, hypotheses or conclusions which contribute to the research question.	Student is able to organize literature and critically evaluates the quality of his literature sources. He comes to an original synthesis that results in own original insights, hypotheses or conclusions which contribute to the research question.
A2) Experimental skills					
1. Technical skills					
1-3	4-5	6	7	8	9-10
Not able to perform any technical handling.	Performs technical handling but makes errors even with direct help of supervisor.	Performs technical handling correctly with direct help of supervisor.	Performs most technical handlings correctly after detailed instruction by supervisor.	Performs most technical handlings correctly after global instruction by supervisor.	Performs technical handlings correctly, and suggests useful modifications.
2. Accuracy					
1-3	4-5	6	7	8	9-10
Not able to execute experiment set up by supervisor and/or lost when using data; makes no notes.	Makes many errors when executing detailed instructions even with help of supervisor; notes not understandable.	Executes detailed instructions to some extend and avoids errors as long as direct help is present; student can work.	Executes detailed instructions but does not take sources of error and uncertainty into account; notes understandable with explanations.	Executes detailed instructions and takes sources of error and uncertainty into account; notes understandable for supervisor.	Able to judge set up of existing experiment, includes modifications if needed and executes it. Takes sources of error and uncertainty into account; notes understandable for others.
3. Lab journal, logbook					
1-3	4-5	6	7	8	9-10

No description of methods and recording of the information/data.	Insufficient description of methods and insufficient recording of the information/data.	Some descriptions of methods. Recordings of the information/data are present but not always sufficient.	Most methods are described. Recordings of the information/data are present and mostly sufficient.	Methods are described but details are sometimes lacking. Recordings of the information/data are present and sufficient.	Descriptions of methods and recordings of the information/data are appropriate, complete and clear.
A3) Design skills					
1. Design method and process					
1-3	4-5	6	7	8	9-10
No description of the design. Student is not able to set-up a design from input of supervisor.	Design description without functional steps and without elaboration on technical, financial, environmental and societal aspects. Student is able to set-up basic design only based on input of supervisor.	Design description with functional steps and without elaboration on technical, financial, environmental and societal aspects. Student is able to set-up a basic design on own input but is not able to elaborate evenly on feedback of the supervisor.	The design is described in functional steps. Steps are clearly elaborated on technical, financial, environmental and societal aspects. Student is able to set-up a basic design and elaborate on most aspects of the design. A simple mass-balance model was developed. Feedback is successfully used to improve the design.	The design is described in functional steps. Steps are clearly elaborated on technical, financial, environmental and societal aspects. Several scenarios were assessed by applying software design tools. Student is able to do the elaboration mainly by its own. Supervisor provides detailed instruction on the designed modelling.	The design is described in functional steps. Steps are clearly elaborated on technical, financial, environmental and societal aspects. Several scenarios were in-depth assessed by applying software design tools. Student is able to set-up the software model after global instruction of the supervisor.
B) Report					
1. Problem definition and research set-up					
1-3	4-5	6	7	8	9-10
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..	The research questions are mostly clear but could have been defined sharper at some points.	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.
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	The link between the thesis research and existing research does not go beyond the information provided by	Context of the research is defined well, with input from the student. There is a link between the context and research	Context of the research is defined sharply and to-the-point. Research questions emerge directly from the	Research is positioned sharply in the relevant scientific field. Student is able to indicate the novelty and innovation of

	researched.	the supervisor.	questions.	described context.	the research.
2. Theoretical underpinning and use of literature					
1-3	4-5	6	7	8	9-10
No discussion of underlying theories.	There is some discussion of underlying theories, but the description shows serious errors.	Student has found the relevant theories, but the description has not been tailored to the project at hand or shows occasional errors.	Student has found the relevant theories, and has been partially successful in tailoring the description to the project at hand. Few errors occur.	Student has found the relevant theories, makes a synthesis of those, and has been successful in tailoring the description to the project at hand.	Clear, complete and coherent overview of relevant theories. Exactly tailored to the project at hand.
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 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 All papers included are relevant.
3. Description of methods and data analysis					
1-3	4-5	6	7	8	9-10
No description of methods and analysis of the information/data.	Insufficient information on methods and insufficient analysis of the information.	Some aspects of the project regarding methods and analysis of information are described insufficiently. Used methods and analysis of data/information are not always appropriate.	Description of methods and analysis of information/data is lacking in a number of places. Used methods and analysis of data/information mostly appropriate.	Description of methods and analysis of information/data is mostly complete, but there are lacking some details. Used methods and analysis of data/information are appropriate.	Description of methods used and analysis of the information is appropriate, complete and clear.
4. Clarity of argumentation and conclusions					
1-3	4-5	6	7	8	9-10
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 or conclusions are not substantiated by 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 well-linked to research questions and substantiated by results. Conclusions mostly formulated clearly but some vagueness in wording.	Clear link between research questions and conclusions. All conclusions substantiated by results. Conclusions are formulated exact.	Clear link between research questions and conclusions. Conclusions substantiated by results. Conclusions are formulated exact and concise. Conclusions are grouped/ordered in a logical way.
No recommendations	Recommendations are	Some recommendations	Recommendations are	Recommendations are	Recommendations are

given.	absent or trivial.	are given, but the link of those to the conclusions is not always clear.	well-linked to the conclusions.	to-the-point, well-linked to the conclusions and original.	to-the-point, well-linked to the conclusions, original and are extensive enough to serve as project description for a new thesis project.
5. Critical discussion					
1-3	4-5	6	7	8	9-10
No discussion and/or reflection on the research. Discussion only touches trivial or very general points of criticism.	Student identifies only some possible weaknesses and/or points at weaknesses which are in reality irrelevant or non-existent.	Student indicates most weaknesses in the research, but does not weigh their impact on the main results relative to each other.	Student indicates most weaknesses in the research and is able to weigh their impact on the main results relative to each other.	Student indicates all weaknesses in the research and weighs them relative to each other. Furthermore, (better) alternatives for the methods used are indicated.	Student is able to identify all possible weaknesses in the research and to indicate which weaknesses affect the conclusions most.
No confrontation with existing literature.	Some confrontation with existing literature but incomplete and irrelevant.	Some confrontation with existing literature, some relevance.	Student identifies only most obvious conflicts and correspondences with existing literature. Student tries to describe the added value of his study but does not relate this to existing research.	Student shows minor and major conflicts and correspondences with literature and can identify the added value of his research relative to existing literature.	Student critically confronts results to existing literature and in case of conflicts is able to weigh own results relative to existing literature. Student is able to identify the contribution of his work to the development of scientific concepts
6. Writing skills including correct references					
1-3	4-5	6	7	8	9-10
BSc thesis 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 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	Main structure correct, but placement of material in different chapters illogical in places. Level of detail 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	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.

		irrelevant information given).		appropriate.	
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. BSc thesis report could have been written more concisely.	Formulations in text are clear and exact, as well as concise.	*Textual* quality of thesis is such that it could be acceptable for a peer-reviewed journal.
English incorrect and unreadable. Spelling and grammar errors too many to count.	English incorrect and very hard to read. Spelling and grammar errors so numerous that they make the thesis almost impossible to understand.	English somehow correct but not pleasant to read. Spelling and grammar errors numerous.	English basically correct and readable. Spelling and grammar errors present but at acceptable quantities.	English correct and pleasant to read. Some spelling and grammar errors.	English fluent and pleasant to read. Few spelling and grammar errors. English is (almost) at the level of what is written in peer-reviewed journals.
Student is often inconsequent in references in the text and/or reference list or often references are lacking.	Student is often inconsequent in references in the text and/or reference list or often references are lacking.	Student is sometimes inconsequent in references in the text and/or reference list or sometimes references are lacking.	Student is sometimes inconsequent in references in the text and/or reference list.	Student uses one format for references in the text and reference list.	Student uses one format for references in the text and reference list.
C) Presentation					
1. Graphical presentation					
1-3	4-5	6	7	8	9-10
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 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.
2. Verbal and non-verbal presentation					
1-3	4-5	6	7	8	9-10
Spoken in such a way that majority of audience	Presentation is uninspired and/or	Quality of presentation is mixed: sometimes clear,	Mostly clearly spoken. Sometimes monotonous	Clearly spoken in such a way that it keeps	Relaxed and lively though concentrated

could not follow the presentation.	monotonous and/or student reads from slides: attention of audience not captured	sometimes hard to follow.	or difficult to follow.	audience's attention.	presentation. Clearly spoken in such a way that it keeps audience's attention.
Student does not make eye-contact, moves in a very restless way or is completely frozen, does not support his words with gestures.	Student hardly makes eye-contact, moves too much or is almost frozen, hardly supports his words with gestures.	Student sometimes makes eye-contact, moves in a way that is not very annoying or distracting, makes some useful supporting gestures.	Student regularly makes eye-contact, moves rather naturally, and makes some supporting gestures.	Student makes eye-contact, moves naturally, makes supporting gestures.	Student constantly makes eye-contact, moves naturally, is lively and relaxed and makes supporting gestures.
Language and interest of audience not taken into consideration at all.	Language and interest of audience hardly taken into consideration.	Language and interest of presentation at a couple of points not appropriately targeted at audience.	Language and interest of presentation mostly targeted at audience.	Language and interest of presentation well-targeted at audience. Student is able to adjust to some extent to signals from audience that certain parts are not understood.	Take-home message is clear to the audience. Language and interest of presentation well-targeted at audience. Student is able to adjust to signals from audience that certain parts are not understood.
D) Final discussion					
1. Knowledge of study domain					
1-3	4-5	6	7	8	9-10
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 on a textbook level and realizes the importance of literature without using it.	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.
2. Thesis defence					
1-3	4-5	6	7	8	9-10
Student is not able to defend/discuss his thesis. He does not master the contents	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	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.

				practical context.	