

# Rubric for assessment of MSc-thesis Soil Quality



Author: Arnold F. Moene, Meteorology and Air Quality Group, Wageningen University

Version: 1.0 (November 23, 2009)

This document is released under the Creative Commons Attribution-Non-commercial-Share Alike 3.0 Netherlands License

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<b>1. Research competence (45%) *</b>						
<b>1.1. Commitment and perseverance</b>	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. Takes complete control of his own project. Considers setbacks as an extra motivation.
<b>1.2. Initiative and creativity</b>	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.
<b>1.3. Independence</b>	The student can only perform the project 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 if all tasks have been performed.	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.
	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.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<b>1.4. Efficiency in working with data</b>  Note: depending on the characteristics of the thesis work, not all three aspects (experimental work, data analysis and model development) may be relevant and some may be omitted	<b>Experimental work</b>  Student is not able to set up 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.	Student is able to execute an experiment that has been designed by someone else (without critical assessment of sources of error and uncertainty).	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</b>  Student is lost when using data. Is not able to use a spreadsheet 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.
	<b>Model development</b>  Student is not able to make any modification/addition to an existing model.	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.
<b>1.5. Handling supervisor's comments and development of research skills</b>	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 other 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.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<b>1.6. Keeping to the time schedule</b>	Final version of thesis or colloquium more than 50% of the nominal period overdue without a valid reason (force majeure).	Final version of thesis or colloquium at most 50% of the nominal period overdue (without a valid reason).	Final version of thesis or colloquium at most 25% of nominal period overdue (without valid reason).	Final version of thesis or colloquium at most 10% of nominal period overdue (without valid reasons).	Final version of thesis or colloquium at most 5% of nominal period overdue (without good reasons).	Final version of thesis and colloquium finished within planned period (or overdue but with good 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.	Realistic time schedule, with timely adjustments of both time and tasks.
<b>2. Thesis report (45%) *</b>						
<b>2.1. Relevance research, clearness goals, delineation research</b>	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. Student is able to indicate the novelty and innovation of the research.
	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>2.2. Theoretical underpinning, use of literature</b>	No discussion of underlying theory.	There is some discussion of underlying theory, but the description shows serious errors.	Student has found the relevant theory, but the description has not been tailored to the research at hand or shows occasional errors.	Student has found the relevant theory, and has been partially successful in tailoring the description to the research at hand. Few errors occur.	Student has found the relevant theory, made a synthesis of it, and has been successful in tailoring the description 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.
	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 gray literature.	Relevant peer-reviewed papers in reference list but also some gray 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 (not text books). All papers included are relevant.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<b>2.3. Use of methods and data</b>	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>2.4. Critical reflection on the research performed (discussion)</b>	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 not only able to identify all possible weaknesses in the research, but is also able to indicate which weaknesses affect the conclusions most.
	No confrontation with existing literature.	Confrontation with irrelevant existing literature.	Only trivial reflection vis-à-vis existing literature.	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.
<b>2.5. Clarity of conclusions and recommendations</b>	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 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 given.	Recommendations are absent 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 project description for a new thesis project.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
<b>2.6. Writing skills</b>	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 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 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 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 affect 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 acceptable for a peer-reviewed journal.
<b>3. Colloquium (5%) *</b>						
<b>3.1. Graphical presentation</b>	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.
<b>3.2. Verbal presentation and defence</b>	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.

Item	Mark for item					
	2-3	4-5	6	7	8	9-10
	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.
	Student is not able to answer questions.	Student is able to answer only the simplest questions.	Student answers at least half of the questions appropriately.	Student is able to answer nearly all questions in an appropriate way.	Student is able to answer all questions in an appropriate way, although not to-the-point in some cases.	Student is able to give appropriate, clear and to-the-point answers to all questions.
<b>4. Examination (5%) *</b>						
<b>4.1. Defence of the thesis</b>	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 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.
<b>4.2. Knowledge of study domain</b>	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 (but related to) the topic of the thesis.