

Dear members of the thesis committee,

Thank you for your willingness to evaluate this PhD thesis. Wageningen University PhD theses are evaluated on five criteria using a standard form and a rubric which is provided at the end of this document. The aim of using a rubric is to enhance homogeneity of assessments and the ability to discuss assessments with other examiners and the (co-) promotor(s) (main supervisors). Also, it clarifies the expectations for a thesis to PhD candidates. The standard evaluation form also has comment fields to elaborate on your evaluation for each of the five criteria. The use of these comment fields is highly recommended for providing additional feedback. In the rubric:

- each row represents one criterion, e.g. originality of the research;
- each column represents a level for the grading, e.g. 'good';
- each cell describes the level for that criterion.

Please start at the lowest mark in the rubric and test whether the PhD thesis is better described by the next higher level. Achievements at lower levels are implicit at higher levels and not again included in the criteria.

You are kindly asked to describe in 25 – 100 words your evaluation of each of the five criteria. You could do this by comparing representative examples from the thesis to the descriptors in the rubric.

It could be that the PhD thesis scores 'unacceptable' on one criterion and 'good' on another. An 'unacceptable' for one of the first four criteria designates that the thesis is not defensible in which case it is important to provide detailed feedback to enable the candidate to develop a revised version.

Your thesis evaluation will be made available to the Dean of Research and is used to decide whether the PhD candidate can be allowed to defend the thesis.

Moreover, the Dean will use your evaluation to decide whether the PhD thesis should be considered for a cum laude designation in which case two additional reviewers will review the thesis<sup>1</sup>. In addition, directly after the public defence of the thesis, the committee will discuss the quality of the thesis and the defence in a joint meeting chaired by the Rector Magnificus or his replacement and it is here where your anonymized evaluation report will be used by the Rector Magnificus. Your anonymized thesis evaluation report will only be disclosed to fellow committee members when the PhD thesis is considered for a cum laude.

The (co-)promotor(s) will receive your anonymised thesis evaluation report:

- in case the thesis is graded as 'unacceptable', to allow the candidate to improve the thesis. Your comments and reasons for your judgement are important as the candidate has the possibility to revise the thesis and/or provide a rebuttal;
- immediately after the defence, as feedback to the (co-)promotor(s) regarding the quality of this particular thesis and to clarify the expectations for possible next PhD theses under her/his supervision.

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<sup>1</sup> Please note that after the defence, a thesis can only qualify for the judgement of excellent if the cum laude procedure has been followed. Despite the procedure followed, the defence can qualify for the judgement of excellent.

If you propose the candidate can defend the thesis, you can only identify grammatical, formatting and minor errors. Your suggestions for correction of these errors will be forwarded to the (co-)promotor(s), who will then confer with the PhD candidate whether or not to incorporate your suggestions in the thesis.

### **Requirements for the degree of doctor awarded by Wageningen University**

In order to be awarded the degree of doctor, the candidate must have demonstrated the capability of:

1. functioning as an independent practitioner of science who is able to:
  - a. formulate scientific questions, either based on social issues or scientific progress;
  - b. conduct original scientific research;
  - c. publish articles in peer-reviewed scientific journals, publish books with scientific publishers or make a technical design;
2. integrating her/his research in, or placing it within the framework of, the own scientific discipline and against the background of a broader scientific area;
3. placing the research aims and research results in a societal context;
4. postulating concisely worded propositions in scientific and societal areas, formulated in such a way that they are subject to opposition and defence.

## Appendix 6b Rubric for evaluation of disciplinary and multidisciplinary PhD theses

Criteria	Unacceptable	Acceptable	Satisfactory	Good	Very good	Excellent
<b>1. Originality of the research</b>	Does not make (or has not made) a contribution to any discipline, either because it is a copy, or nearly so, of work done before by others, or because the research question is trivial.	Makes (or has made) a small and not very original contribution to one of the disciplines involved, uses a cookbook approach, is not really interesting but shows the ability to do research.	Makes (or has made) a modest contribution to one of the disciplines involved by addressing relevant, but small and traditional questions that are interesting for those who work on the same subject.	Makes (or has made) a substantial contribution to one of the disciplines involved by addressing relevant questions that are interesting for others within the field. It is a solid part of normal science but does not open up the field.	Makes (or has made) <b>either</b> an important contribution to one of the disciplines involved by solving old problems in a new way, or by addressing new and relevant questions, however without completely exploring and solving those new questions; <b>or</b> makes substantial contribution to more than one discipline (see 'good').	Makes (or has made) <b>either</b> an exciting, major contribution to one of the disciplines involved, either by solving old problems in a brilliant, innovative way or by asking and answering new and intriguing questions; <b>or</b> makes an important contribution to more than one discipline (see 'very good').
<b>2. Scientific quality of research chapters</b>  <b>see footnotes: 1, 2, 3</b>	<p>Chapters are incoherent and choices and interpretations are mostly not convincing.</p> <p>The chapters are not publishable in any reputable journal or by any reputable book publisher and are not expected to be cited nor have any scientific impact.</p> <p>In case of a monograph, it is not likely to be cited nor have any scientific impact</p>	<p>Chapters lack clear cohesion and choices and interpretations are not always convincing.</p> <p>One or two chapters are publishable in a reputable journal or by a reputable book publisher, but they are expected to be cited below the norm in the discipline(s) involved and have a lower than average scientific impact.</p> <p>In case of a monograph, it is likely to be cited considerably below the norm in the discipline(s) involved and have considerably lower than average scientific impact.</p>	<p>Chapters have sufficient cohesion and choices and interpretations are mostly convincing.</p> <p>Most chapters are publishable in a reputable journal or by a reputable book publisher, but only some chapters are expected to be cited in line with the norm in the discipline(s) involved and have an average scientific impact, while others are expected to be cited below the norm and have a lower than average impact.</p> <p>In case of a monograph, it is likely to be cited in line with or slightly below the norm in the discipline(s) involved and have at most an average scientific impact.</p>	<p>Chapters are coherent and mostly well justified and convincing.</p> <p>Most chapters are published or likely to be published in reputable journals or by a reputable book publisher, and they are expected to be cited at least as well as the norm in the discipline(s) involved and have an average scientific impact. Some chapters are expected to be cited above the norm and have a higher than average scientific impact.</p> <p>In case of a monograph, it is likely to be cited in line with or slightly above the norm in the discipline(s) involved and have at least an average scientific impact.</p>	<p>Chapters are coherent, very convincing and some of them are thought provoking and exciting.</p> <p>All chapters are published or likely to be published in reputable journals or by a reputable book publisher, and they are expected to be cited above the norm in the discipline(s) involved and have higher than average scientific impact and some will be cited substantially better than the norm and have a substantially higher than average scientific impact.</p> <p>In case of a monograph, it is likely to be cited above the norm in the discipline involved and have a higher than average scientific impact.</p>	<p>Chapters are very coherent and convincing, all are exciting and some of them ground-breaking.</p> <p>All chapters are published or likely to be published in reputable journals or by a reputable book publisher, and they are expected to be cited substantially better than the norm in the discipline(s) involved and will have a substantially higher than average scientific impact.</p> <p>In case of a monograph, it is likely to be cited substantially above the norm in the discipline involved and have a scientific impact.</p>

	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very good</b>	<b>Excellent</b>
<b>3. Reflection on the research as shown in 'Introduction' and 'General discussion'</b>	<p>There is no explanation of the added value of conducting this disciplinary or multidisciplinary research in either scientific or societal terms.</p> <p>The work does not show how the results fit in existing knowledge, or what the societal relevance is.</p> <p>The results from the different chapters are not connected to each other in any way.</p> <p>Possible weaknesses in the research are not discussed.</p>	<p>Argument for conducting this disciplinary or multidisciplinary research is trivial; it is made plausible that the proposed disciplinary or multidisciplinary research lines can be interesting (in scientific and/or societal terms), but choices made remain arbitrary.</p> <p>Trivial reflection on how results fit in the existing knowledge and what the societal relevance is.</p> <p>The results from the different chapters are connected to each other in a loose manner that is not very convincing.</p> <p>The most obvious weaknesses in the research are indicated, but not how they affect the conclusions.</p>	<p>There is a reasonably plausible argument (in scientific and/or societal terms) for pursuing the proposed disciplinary or multidisciplinary research lines.</p> <p>Narrow view on how results fit in the existing knowledge and what the societal relevance is.</p> <p>The results from the different chapters are partially connected to each other in a manner that is partially convincing.</p> <p>Most weaknesses in the research are indicated, but less clearly how they affect the conclusions.</p>	<p>There is a convincing argument of why it is relevant (in scientific and/or societal terms) to pursue the proposed disciplinary or multidisciplinary research lines.</p> <p>Obvious correspondences and conflicts with existing knowledge are identified. Most obvious societal relevance is indicated.</p> <p>The results from the different chapters are partially connected to each other in a manner that is mostly convincing.</p> <p>Most weaknesses in the research are indicated, and also how they affect the main conclusions.</p>	<p>There is a compelling and original argument of why it is relevant (in scientific and/or societal terms) to pursue the proposed disciplinary or multidisciplinary research lines.</p> <p>Most correspondences and conflicts with existing knowledge are identified. Societal relevance is mostly well indicated.</p> <p>The results from the different chapters are fully connected to each other in a manner that is mostly convincing.</p> <p>All weaknesses in the research are indicated, and also how they affect the main conclusions.</p>	<p>There is a compelling, original and exciting argument of why it is relevant (in scientific and/or societal terms) to pursue the proposed disciplinary or multidisciplinary research lines.</p> <p>Results are critically confronted with existing knowledge. Societal relevance is addressed in full.</p> <p>The results from the different chapters are fully connected to each other in a manner that is entirely convincing.</p> <p>All weaknesses in the research are indicated, and also how they affect each of the conclusions.</p>
<b>4. Quality of the written presentation</b>	<p>Writing, tables, figures and layout are so poor that it is hard to understand what the candidate wants to say. Reading is very difficult.</p> <p>The thesis is unstructured, often information is missing or presented in the wrong place.</p>	<p>Writing, tables, figures and layout are not always correct and clear, level of detail varies widely, but with effort the text is understandable. Reading is difficult.</p> <p>Main structure of the thesis is adequate, but placement and structure of sections are often not logical.</p>	<p>Writing, tables, figures and layout are mostly adequate, but level of detail varies, and text could be more concise. Reading is laborious.</p> <p>Main structure of the thesis is correct, placement and structure of sections are not logical in places.</p>	<p>Writing is correct and mostly clear, but text could be more concise. Tables, figures and layout are mostly clear, with few errors. Reading is effortless.</p> <p>Main structure of the thesis is correct, but some sections are less well placed or less well structured.</p>	<p>Writing is clear and concise, tables, figures and layout are functional and flawless. Reading is a joy.</p> <p>Main structure of the thesis is clear and correct, most sections are well structured and well placed.</p>	<p>Writing is crystal clear and compelling, concise but balanced with sufficient detail, with attractive, functional tables, figures and layout. Reading is exciting.</p> <p>The thesis is very well structured with each chapter and section having a clear function and presented in a logical order.</p>

	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very good</b>	<b>Excellent</b>
<b>5. Overall assessment</b>	In case one of the five criteria is marked as 'unacceptable' by any of the opponents/ reviewers, the PhD candidate will not be allowed to defend the thesis without major revision.	Based on the above categories the overall quality of the thesis is considered acceptable. The PhD candidate will be allowed to defend the thesis.	Based on the above categories the overall quality of the thesis is considered satisfactory. The PhD candidate will be allowed to defend the thesis.	Based on the above categories the overall quality of the thesis is considered good. The PhD candidate will be allowed to defend the thesis.	Based on the above categories the overall quality of the thesis is considered very good. The PhD candidate will be allowed to defend the thesis.	Based on the above categories the overall quality of the thesis is considered excellent. This PhD thesis belongs to the top of the scientific field. This may be reason for awarding the designation 'cum laude' ('with distinction'). <sup>4</sup>

<sup>1</sup> The precise criteria for assessing quality may differ per discipline and type of research. Accordingly, quality criteria may relate to use of theory, research design, methods of data collection, analytical approaches, modelling, validation, conclusion and discussion. More general quality criteria in relation to such building blocks include depth of argumentation, justification of choices, creativity, clarity, sophistication and the level of coherence between the building blocks.

<sup>2</sup> In the case of a design, please consider the originality of the design and the contribution to technology. Consider the candidate's technological competence, application of design methodologies, and analytical and integrative skills.

<sup>3</sup> If the research chapters are multi-authored, it is important to consider the candidate's contribution to each chapter, in particular when s/he is not the first author. To this end, an authorship statement by the candidate has been added to the thesis manuscript. Also, it's good to check whether the research chapters show a level of written presentation similar to the Introduction and General discussion. If the research chapters are written in a better way, this may result in a higher grade for the criterion 'research chapters' but it suggests an important contribution of co-authors. Thus, a higher grade for the research chapters alone should perhaps not be reflected in the overall grade of the thesis

<sup>4</sup> After the oral defence, the committee will be asked to comment on the quality of the defence. At that point the final decision whether or not to award a cum laude designation is made by anonymous voting.