

"Assessing a doctoral thesis"

A handbook prepared by the Sahlgrenska Academy mainly for those who are appointed as members of an examining committee at a public defence of doctoral thesis, faculty examiner or chairperson of the public defence

Gothenburg, 30 September 2008 (version 1)

Foreword

The doctoral thesis is a cornerstone of the academic world. In Sweden, the doctoral thesis and its public defence are the high-point of four years of full-time studies at the third-cycle level (240 credits). Few things can be as intellectually stimulating as a public defence with a competent thesis author and a well-prepared and initiated faculty examiner. The university's tradition is that we show each other respect by carefully reading, reviewing and critiquing each other's work with the aim of understanding and improving it. Quality is improved and expertise is deepened through this scholarly tradition. In a debate, the invisible line between "*respectful critique*" and "*disrespectful criticism*" can sometimes be crossed, which is always an unfortunate failure.

Disparaging judgements with the aim of belittling the work of colleagues is of course never acceptable. It is a great art and a life task for every university graduate to constantly develop the ability for argumentation and critical examination.

In every thesis defence, there is an examining committee the composition of which is regulated in the Higher Education Ordinance. At the Sahlgrenska Academy, one of the members shall belong to the permanent examination board to enable a collegial discussion about doctoral theses at the faculty. The members of the examining committee have the difficult task of assessing the quality of the doctoral thesis and the thesis author's defence at the disputation. To help them, the members have their own scholarly expertise and naturally their own experience of earlier public defences. However, there are few criteria that describe the difference between a "*good*" and a "*bad*" doctoral thesis, refer to the reference list on page 12 [1-9]. For this reason, the permanent examination board initiated the work of preparing criteria for the assessment of a doctoral theses in the form of a "*handbook*". Inspiration has been gathered from Karolinska Institutet [8] and consultations have also been held with the head of the Research Programmes Board in Linköping, Professor Per Hultman.

The objective of "*Assessing a doctoral thesis*" (version 1) is to provide advice and create a platform for a collegial discussion. Reaching consensus is probably not possible. Some colleagues consider that the examination of a doctoral thesis is a holistic assessment that no criteria can do justice. Others will seek nuances and other criteria. The permanent examination board has requested that the academy make the implicit explicit [1, 2]. With this handbook, the work of developing assessment criteria has only begun.

Gothenburg, April 2008



Börje Haraldsson, Vice Dean

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Examining committee

An examining committee of three or five people with at least qualifications required for appointment as a docent is appointed by the Council for postgraduate studies (FUR) on proposal from the department. At least one of the members shall be appointed among the teachers at another faculty board's area of responsibility or at another university, that is outside the Sahlgrenska Academy - if possible from a university outside Sweden. At least one person shall belong to the permanent examination board, two people if the examining committee has five members. Both men and women should be represented in the examining committee. None of the members may have a conflict of interest, see below.

Chair of the examining committee

A member of the permanent examination board is appointed the chair of the examining committee. Upon questions, ambiguities or criticism during the preparatory review, it is the task of the chair to:

- coordinate the examination of the thesis' articles, or in case of a monograph of the entire thesis,
- allow all members of the examining committee to study potential critical points of view,
- coordinate the criticism and the proposals for improvements that are presented in a statement that the members of the examining committee can stand behind.

If the examining committee finds that the articles of the thesis, or monograph, do not meet set quality requirements, the public defence shall be postponed. A decision to postpone the public defence shall be justified in writing by the Chair of the examining committee with proposals for improvements.

When the preparatory review is complete, the doctoral thesis can be defended. After the public defence of the doctoral thesis, the examining committee meets. The Chair of the examining committee is responsible for ensuring that rules and procedures are followed at the meeting. The Chair is also responsible for the form "Approved disputation" being completed, signs the minutes and submits it to the Chair of the public defence after the meeting, see below.

Faculty examiner

The faculty examiner (opponent) is appointed by FUR on the proposal of the department. The faculty examiner must possess qualification required for appointment as a docent or the equivalent. The faculty examiner shall come from another university or from abroad. The faculty examiner may not have a conflict of interest.

Conflict of interest (Disqualification)

Rules regarding conflict of interest can be found in Sections 11-12 of the Administrative Procedure Act for government operations. The regulations in the Administrative Procedure Act are divided so that Section 11 presents the circumstances that shall be considered as grounds for doubt, while Section 12 presents what consequences a conflict of interest has for an administrator and how such issues shall be handled.

Excerpts from the Administrative Procedure Act on conflicts of interest:

11 § The person charged with handling a matter is disqualified:

1. if the matter concerns himself or his spouse, parents, children, brothers or sisters or someone else who is closely related to him, or if he or someone closely related to him can expect extraordinary advantage or detriment from the outcome of the matter,
2. if the matter concerns himself or his spouse, parents, children, brothers or sisters or someone else who is closely related to him, or if he or someone closely related to him can expect extraordinary advantage or detriment from the outcome of the matter,
3. if the matter has been brought before the authority by an appeal against or the subordination of the decision of another authority or by reason of the supervision of another authority and he had taken part earlier under the auspices of the subordinate authority in the final handling of a matter concerning the same material issue,
4. if he as regards the material issue has served someone as a representative or has assisted him for payment, or
5. if there is some other special circumstance that is likely to undermine confidence in his impartiality in the matter.

Disqualification shall be disregarded where the question of impartiality is obviously of no importance.

12 § A person who is disqualified may not handle the matter. He may, however, take those steps that cannot be made by someone else without an inconvenient delay.

Anyone who knows of any circumstance that could constitute his disqualification is obliged to disclose it on his own motion.

If an issue of disqualification has been raised and the person in question has not been replaced, the authority shall decide the issue of disqualification as soon as possible. The challenged person may not take part in the consideration of the issue of his disqualification, unless the authority is not competent to act without him and there is no one available to replace him without an inconvenient delay.

A decision concerning an issue of disqualification may be appealed against just in conjunction with an appeal against the decision by which the authority determines the matter.

The conflict of interest (disqualification) rules are directed at the person who shall administer a matter. It is primarily the person who has a conflict of interest him- or herself who shall bring the conflict of interest to attention. Often, nobody else is aware of the special circumstance that forms the basis of the conflict of interest.

Clarifications of the legal text:

- the relationship between doctoral student and supervisor entails a lifelong

conflict of interest

- co-authorship entails a conflict of interest for five years
- active cooperation constitutes a conflict of interest
- one does not have a conflict of interest only because one is employed in the same department, clinic, unit or section.

Also refer to the conflict of interest rules for the Swedish Research Council:
<http://www.vr.se/huvudmeny/forskningsetik/jav.4.9232df81081e742f7e800042.html>

In many places, it is customary for the faculty examiner, supervisor and doctoral thesis author to eat dinner together the evening before the public defence. The Academy considers this type of interaction to not constitute a risk of a conflict of interest.

Preparatory review

The examining committee's members preview the doctoral thesis' articles, or the entire thesis if it involves a monograph. The examination shall normally be complete within three weeks.

As a basis, there shall also be a **supervisor's certificate** where the defending author's and other co-author's contributions and work contributions are described. The supervisor's certificate shall also note relevant ethical permits that constitute the basis of the studies.

In the preparatory review, the members of the examining committee shall primarily answer the following two questions:

1. Does the material for the doctoral thesis constitute a scope and a quality commensurate with at least four years of full-time study at the third-cycle level? This assessment is holistic, but the criteria below can facilitate the assessment [1, 2]. It is not the number of articles that is crucial, but rather it is a matter of a comprehensive assessment of quality and quantity. The Academy strives for fewer and more extensive articles in well-reputed journals. The doctoral candidate's contribution shall be presented by the supervisor's certificate as this can be difficult to evaluate in studies with many co-authors.
2. Are there suspicions of ethical deficiencies or irregularity in the research? The society's trust is compelling and it is important that the studies are reviewed by the regional Ethical Review Board and/or that there is permission from the animal experiment ethical review board. There may be no suspicion of irregularity in the research.

The previewing work is coordinated by the Chair of the examining committee. All members in the examining committee shall preview the articles in the doctoral thesis and each provide their assessment. If a member believes the doctoral thesis can be defended, no motivation is necessary. If critical opinions come forth, the examining committee can recommend that the defence of the doctoral thesis be postponed (three to six months) to provide time to improve the quality.

The examining committee can also recommend against disputation. In the latter two cases, the examining committee, under the guidance of the Chair, provide written criticism that is sufficiently detailed and constructive to give the doctoral student and supervisor guidance regarding the measures that need to be undertaken.

Note that an approved preview only means that the examining committee considers the articles/monograph to be of a sufficiently high level to be able to be defended publicly. This does not entail a "prior notice" of an approved defence as the examining committee must assess the doctoral thesis in its entirety and the author's defence.

Public defence

The public defence (disputation) of doctoral thesis takes place in English or Swedish. The Chair of the public defence presents the participants and then relinquishes the floor to the defending author for a presentation of potential thesis errata. The public defence can, by way of suggestion, begin with a brief (about five minute) review of the subject by the faculty examiner (opponent). The doctoral thesis involved is beneficially presented by the defending author him or herself for around 20 minutes. The examination then begins, led by the faculty examiner. The opposition may take the time necessary, which in most cases means around 90 minutes, sometimes 60 minutes and, occasionally, several hours. The Chair can interrupt a longer defence for a 15-20 minute break if necessary. When the faculty examiner has completed his or her task, the Chair of the public defence leads a question and answer session. The members of the examining committee are first offered the opportunity to ask questions of the defending author in order. The others in the auditorium are then invited to ask questions and comment on the doctoral thesis. This part is an important part of the principle of public access and the Chair should actively encourage the auditorium to participate in the discussion. The Chair then concludes the defence, the examining committee meets, and the defending author is then notified of the committee's decision.

Chair of the public defence

The Chair of the public defence is appointed by FUR on the proposal of the department. The Chair shall possess qualifications required for appointment as a docent and be well familiar with the applicable rules and ordinances. The Chair may not have a conflict of interest, meaning that neither the main supervisor or assistant supervisor may be appointed as the Chair of the public defence.

The Chair has the following rights and obligations during the public defence:

- Mandate to appoint members of the examining committee if any of the members were unable to attend with short notice (i.e. within hours of the public defence)
- The Chair may potentially convene members of the examining committee, the faculty examiner and supervisor to an informal meeting before the public defence
- Initiating the public defence by welcoming those present and presenting the defending author, the title of the doctoral thesis, the faculty examiner, and the members of the examining committee
- Informing the auditorium of the procedure in the public defence, see above.
- Leading the question and answer session after the conclusion of the opposition by giving the floor to the members of the examining committee.
- Encouraging the auditorium to ask questions and comment on the doctoral thesis after the examining committee has concluded its question period.
- Offering a short break (15 min) after the public defence has been under way for more than two hours and forty-five minutes (2:45 h).
- Offering a longer break for a mealtime if the public defence has been under way for five hours.
- Intervening and providing a rebuke if anyone during the public defence uses invective, disparaging comments, or otherwise behaves inappropriately or disruptively.
- Concluding the public defence when there are no more questions, or when the Chair deems that the discussion is coming to a close.
- Leading the examining committee, faculty examiner and main supervisor to a separate room for a meeting.

If a member of the examining committee is absent...

If a member is prevented from attending days or weeks prior to the public defence, a replacement is appointed by FUR. In the event of an inability to attend at short notice, a replacement is appointed by the Chair of the public defence.

If the faculty examiner is absent...

If the faculty examiner is prevented from attending days or weeks prior to the public defence, the matter is handled by FUR. The public defence may be postponed, the faculty examiner may be able to participate by video link, or a new faculty examiner is appointed. If the faculty examiner is prevented from attending at short notice, it is incumbent on the Chair of the public defence to appoint one of the members of the examining committee as the faculty examiner. The Chair of the public defence must then appoint a suitable replacement in the examining committee among the auditorium's academic representatives.

Examining committee's commitments in connection with the public defence

When the faculty examiner has concluded his or her work, it is the turn of the members of the examining committee to ask the defending author questions.

During the defence, the members of the examining committee shall assess the defending author's presentation and ability to defend his or her doctoral thesis. Examples of questions the examining committee can ask are presented below.

Meeting of the examining committee

The meeting is led by the Chair of the examining committee, who is also a member of the permanent examination board. The examining committee is a quorum when all members are present. The decision of the majority of the committee's members shall constitute a decision by the committee. Individual members have the right to make a reservation against the decision.

According to the Higher Education Ordinance, only the faculty examiner and the main supervisor for the thesis work have the right to attend the meeting with the examining committee after the defence. They may participate in the deliberations, but not in the decisions. The members establish a grade and possible written justification, and sign the minutes. Minutes are submitted to the Chair of the defence and the defending author is notified of the decision.

Grades

A doctoral thesis can be given the grade pass or fail. In grading, the examining committee shall weigh together the respondent's defence in the disputation with the quality of the thesis' frame story and with the quality and quantity of the included articles.

The assessment of the thesis is facilitated by the criteria presented below. The Chair of the examining committee presents the committee's assessment. If the members are not in agreement, the examining committee shall justify its decision and present dissenting opinions in writing. The notice of approved defence shall also state that a conflict of interest does not exist. Note that the examining committee is in no way bound by potential opinions in connection with the preparatory review.

Assessing a doctoral thesis

The Higher Education Ordinance describes the educational objectives established for the third cycle in Sweden. Every member in the examining committee shall have good knowledge of these educational objectives, which are described below.

In conjunction with this handbook, the Sahlgrenska Academy uses modified criteria from Lovitts [1, 2] in the assessment of doctoral theses. Lovitts conducted interviews of 276 academic teachers, active at 74 departments in ten disciplines at nine American universities. In total, the studied group had 6,129 years of experience, had supervised 3,470 doctoral theses and been members of 9,890 examining committees. The "normal person" in the group studied had been a professor for 22 years, a supervisor for 13 doctoral students and a member of 36 examining committees. Interestingly enough, these individuals considered that they made holistic assessments without a check list (implicit assessment). The study resulted in a number of criteria for doctoral theses of various qualities (explicit assessment) and there was considerable agreement here [1]. The criteria are presented below in a reworked format.

The Higher Education Ordinance objectives for third-cycle education

(An excerpt from the Higher Education Ordinance is presented below)

Degree of Doctor of Philosophy

Scope: A Degree of Doctor of Philosophy is awarded after the third-cycle student has completed a study programme of 240 credits in a subject in which third-cycle teaching is offered.

Outcomes. Knowledge and understanding: For the Degree of Doctor of Philosophy, the third-cycle student shall - demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field, and - demonstrate familiarity with research methodology in general and the methods of the specific field of research in particular.

Competence and skills: For the Degree of Doctor of Philosophy, the third-cycle student shall - demonstrate the capacity for scholarly analysis and synthesis as well as to review and assess new and complex phenomena, issues and situations autonomously and critically - demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work - demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research - demonstrate the ability

in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general - demonstrate the ability to identify the need for further knowledge and - demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.

Judgement and approach For the Degree of Doctor of Philosophy the third-cycle student shall - demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics, and - demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

Research thesis (doctoral thesis): For the Degree of Doctor of Philosophy, the third-cycle student shall have been awarded a pass grade for a research thesis (doctoral thesis) of at least 120 credits.

Miscellaneous: Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Doctor of Philosophy with a defined specialisation.
Ordinance (2007:1337).

Degree of Licentiate

Scope: A Degree of Licentiate is awarded either after a third-cycle student has completed a study programme of at least 120 credits in a subject in which third-cycle teaching is offered, or after a third-cycle student has completed one part comprising at least 120 credits of a study programme intended to conclude with the award of a PhD, if a higher education institution decides that a Degree of Licentiate of this kind may be awarded at the institution.

Outcomes. Knowledge and understanding For a Degree of Licentiate, the third-cycle student shall - demonstrate knowledge and understanding in the field of research including current specialist knowledge in a limited area of this field as well as specialised knowledge of research methodology in general and the methods of the specific field of research in particular.

Competence and skills: For a Degree of Licentiate the third-cycle student shall - demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge as well as to evaluate this work, - demonstrate the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and society in general, and - demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.

Judgement and approach For a Degree of Licentiate the third-cycle student shall - demonstrate the ability to make assessments of ethical aspects of his or her own research - demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and - demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Thesis: For a Degree of Licentiate the third-cycle student shall have been awarded a pass grade for a research thesis of at least 60 credits.

Miscellaneous: Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Licentiate with a defined specialisation.

Assessment of the thesis author's defence

The examining committee shall assess the quality of the doctoral thesis and the thesis author's performance at the public defence. The following are some suggestions on questions for the assessment of the defence:

- Does the defending author demonstrate in-depth knowledge and understanding of the field of research?
- Does the defending author master the literature?
- Does the defending author actively participate in an academic discussion?
- Does the defending author respond to questions and criticism in an objective and adequate manner regardless of how the questioner formulates the question?
- Does the defending author seem to rely on his or her methods and results?
- Can the defending author reflect on strengths and weaknesses of his or her own work?
- Does the defending author demonstrate knowledge of biostatistical analysis or qualitative methods?

Check list in assessment of a doctoral thesis

- Introduction**
- defines relevant problems
 - clearly defines questions one seeks to answer
 - explains the motives of the study
 - places the question in its proper context
 - makes it easier for the reader to study the thesis
- Literature review**
- is relevant, clear and current
 - demonstrates that the author has a good handle on the literature
 - places the problems in the relevant context
 - contains a discussion of the literature that is selective, analytical and thematic and provides a good synthesis
- Theory**
- is well suited, logically interpreted, relevant, clear and current
 - is adapted to the issue to be illustrated
 - the author demonstrates knowledge and understanding of the theory
 - the author indicates the strengths and weaknesses of the theory
- Method**
- the methods used are appropriate and described at an adequate level of detail, and suit the questions to be answered
 - the author demonstrates understanding of the methods' advantages and disadvantages, has knowledge of biostatistical analysis, and of how the methods shall be used
- Results and analysis**
- the analyses can be repeated and/or assumed to be reliable, i.e. achieve standards of credibility and transferability, suit the question and hypothesis and are sophisticated
 - data are of adequate scope and quality, well presented and wisely interpreted
 - the author presents clear insights from the study, as well as its weaknesses
- Discussion and conclusion**
- provides a summary of the findings and perspectives for interpretation
 - refers back to "the introduction"
 - ties together the various elements of the study
 - discusses the study's strengths and weaknesses
 - discusses the study's implications for the field of research and how the findings can be applied
 - discusses future studies

Criteria for the grading of a doctoral thesis

Depending on a number of criteria, a doctoral thesis can be placed into one of four categories: outstanding, very good, acceptable and unacceptable (= failed). No thesis fulfils all criteria in one group and some of the criteria can be considered to be directly contradictory. The criteria are used as a basis for assessments of the doctoral thesis, but do not constitute a grade.

Outstanding

A few doctoral theses at the Sahlgrenska Academy can be counted in this category and they fulfil the following criteria:

- the thesis is original and significant
- it can be described by words such as:
 - ambitious, brilliant, clear, wise, coherent, convincing, concise, creative, elegant, engaging, challenging, interesting, insightful, sophisticated, surprising and thought-provoking
 - well-written and well-structured
- it provides a synthesis of the research field and is interdisciplinary
- joins together components to a whole
- demonstrates maturity and independent thinking
- the thesis presents an opinion in a tone that is convincing and independent and a tone that demonstrates self-confidence
- new questions are asked in the thesis, or it is devoted to an important issue or problem
- the problem studied is clearly formulated and the reader is given an explanation for why this is important to study
- the thesis demonstrates a deep understanding of extensive and complicated literature where the author has a handle on and an overview of the material
- the arguments are focused, logical, rigorous and sustainable
- the thesis is theoretically sophisticated and demonstrates deep understanding of the theory
- the study's design is brilliant and new techniques, methods, analyses or approaches have been used or developed.
- the research is thoroughly carried out and has provided a large amount of data from multiple sources
- the analyses are complete, carried out well, sophisticated and convincing
- the results are significant
- the conclusions tie together the various elements of the study
- the work can be published in top-ranked journals in the research field
- the thesis is of significance to a wider audience and changes people's perceptions
- the thesis moves the boundaries in the discipline and opens new areas of research

Very good

Most of the doctoral theses at the Sahlgrenska Academy probably belong to this group and they are characterised by the following criteria:

- the thesis is solid, well written and well structured
- contains some new ideas, insights and observations, but is not quite as original, significant, ambitious, interesting and challenging as an outstanding thesis
- it has a good question or problem to be solved, but that tends to be small or traditional
- the thesis can be viewed as a clear step in a research programme, i.e. represents good research
- the thesis demonstrates understanding and a mastery of the field
- contains strong, clear and coherent arguments
- contains well conducted research
- demonstrates technical expertise
- uses adequate theory, methodology and techniques that are standard in the field
- obtains solid, expected results and answers to questions posed
- has not fully used the opportunities of completely exploring interesting questions and connections
- makes some contribution to the field of research, but does not open new areas.

Acceptable

Some doctoral theses maintain a low, but acceptable, scholarly class and they can be characterised by the following criteria:

- craftsmanlike thesis that demonstrates technical competence
- demonstrates the ability to conduct research
- is not particularly original or significant
- is not interesting, challenging or surprising
- provides few impressions of creativity, imagination or insight
- the text in the thesis is ordinary, uninspired and slow
- the thesis has deficiencies in structure and organisation, and stays within a narrow field
- the question or problem addressed is not particularly challenging, is already well researched or is a direct continuation of the supervisors' work
- the thesis provides the impression of a more superficial understanding of the field
- contains an adequate literature review and masters the literature, but there is a lack of critical reflection on deficiencies or what is important
- the text forwards arguments, but they are not innovative, complex or convincing
- uses standard methods
- the thesis demonstrates superficial knowledge that is applied to the problem at hand
- the analyses are ordinary and unsophisticated and they do not explore all possibilities and some connections are missed
- the results are predictable, less interesting and only make a minor contribution to the research

Unacceptable

Normally, no doctoral theses shall be defended publicly if they end up in this group, but if they are, the grade of failed shall be given. They should be discovered in the preparatory review and must then undergo significant revision and possibly be supplemented in order to achieve an acceptable standard. An unacceptable doctoral thesis is characterised by the following criteria:

- it may contain plagiarism or deliberate misquotation and incorrect use of sources
- does not demonstrate understanding of fundamental concepts, processes or conventions in the field
- is not well thought through and the problem to be studied is trivial, small or has already been solved
- lacks an understanding of, or misses, relevant literature
- the argumentation is weak, inconsistent or contradictory, unconvincing or incorrect
- does not handle the theory correctly, excludes the theory or uses it incorrectly
- uses less appropriate or incorrect methods
- data are unclear, incorrect, oddly presented or incorrectly interpreted
- uses less appropriate, incorrect or confused analysis
- includes results that are completely self-evident, already well known, obvious, inexplicable or wrongly interpreted
- draws conclusions that lack support in the data or are severely exaggerated
- the thesis does not contribute to greater knowledge in its field of research
- the thesis is poorly written with spelling errors and incorrect grammar
- it provides a slipshod impression and contains direct errors or mistakes

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Appendix 1. Supervisor's certificate

Instruktioner

Huvudhandledare och biträdande handledare ska beskriva doktorandens utveckling och grad av självständighet. Intyget kommer att distribueras till ledamöter i betygsnämnden och till opponent. Handledarintyget ska innehållande följande information och rubriker.

A. Mål. Hur har högskoleförordningens mål med utbildning på forskarnivå uppfyllts när det gäller: A1. Kunskap och förståelse, A2. Färdighet och förmåga, A3. Värderingsförmåga och förhållningssätt? A4. Beskriv doktorandens utveckling och grad av självständighet.

B. Doktorandens bidrag. Beskriv doktorandens bidrag till det vetenskapliga arbetet (idé, frågeställning, val av metod, analys, sammanställning, redovisning, författande) för vart och ett av eventuella delarbeten och för avhandlingen i sin helhet.

C. Övriga författares bidrag. Beskriv vad var och en av författarna har bidragit med i studien.

D. Delarbete i mer än en avhandling. Ange om något delarbete har ingått, eller kommer att ingå, i annan avhandling. Specificera.

E. Etiska tillstånd. Ange diarienummer, ansvarig forskare och giltighetstid för samtliga studier som ingår i avhandlingen.

F. Signering. Intyget dateras och signeras av samtliga handledare

Instructions

The supervisors should describe the development and the degree of independence of the PhD student. The certificate will be distributed to the members of the evaluation board and to the opponent. The certificate should contain the following information and headings:

A. Objectives. To what extent has the PhD student met the objectives of the Swedish Higher Education Ordinance regarding: A1. Knowledge and understanding. A2. Skills and abilities. A3. Judgement and approach. A4. Please describe the development and the degree of independence of the candidate.

B. The contribution of the PhD student. Please describe the contribution of the candidate in the scientific process (hypothesis, design, techniques, analysis, presentation of data, writing) for each study and for the complete thesis.

C. Co-Author contribution. Please specify the contributions of each of the co-authors?

D. Study in more than one thesis? Is any of the studies part, or will be part, of another thesis. Please specify.

E. Ethical permit. The appropriate permits must be presented with their numbers, principal investigator, etc for all studies in the thesis.

F. Signature. The certificate must be dated and signed by all supervisors.