

Guidelines for Writing Licentiate Theses in Veterinary Medicine

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GENERAL INFORMATION

The Licentiate thesis in veterinary medicine is usually written during the fourth, fifth or sixth year of study. Students may, however, begin working on the thesis sooner if their Bachelor's thesis has been accepted and if they have sufficient basic knowledge of the topic. Students should be aware of the fact that no time is allocated for the thesis in the study schedule so that they, together with their supervisor(s), can ensure that the thesis is completed in three years of Licentiate study. The scope of the Licentiate thesis in veterinary medicine is 20 ECTS credits (a literature review) or 25 ECTS credits (if the thesis reports original experimental work). The thesis thus requires about three to four months of full-time work.

The Licentiate thesis must examine a topic or research question important for veterinary medicine or of scientific or professional interest to the student. Thesis work includes writing a research plan together with the supervisor, searching for information, studying the literature, completing experimental work (if any), writing the thesis, participating in seminar work and passing a written maturity test. The present guidelines focus on the writing process. The thesis must demonstrate the student's familiarity with scientific thought and his or her command of the necessary research methods, knowledge of the thesis topic and ability to communicate scientifically. It can be written in a language other than Finnish or Swedish only in exceptional circumstances. The thesis must be written in grammatically correct and fluent Finnish or Swedish. For more information, see the online communications guide at <http://www.kielijelppi.fi>.

The Licentiate thesis is evaluated by two examiners and graded by the Faculty Council. The evaluation is conducted using matrixes prepared for [literature reviews](#) and [theses reporting original experimental work](#). Before the assessment, the authenticity of the thesis is verified using the URKUND plagiarism control system, which is also used as a tool in thesis supervision. Guidelines on URKUND and scientific writing can be found on the University's Copy Right webpages at <http://blogs.helsinki.fi/alakopsaa/?lang=en>.

2 TITLE PAGE

Place the title of the thesis and your name at the centre of the title page. The title page must also indicate the name of the discipline and the department with which the thesis is associated, the name of the Faculty and the University, the year of completion of the thesis and the nature of the work (i.e., a Licentiate thesis in veterinary medicine). Otherwise you are free to edit the title page as you wish – you may liven it up, for instance, with colours and pictures (while paying attention to copyright matters).

3 ABSTRACT

All theses must include an abstract in either Finnish or Swedish. The thesis may also include an abstract written in English. The abstract cannot be written until the entire thesis has been completed. Write the abstract on a separate form designed for this purpose and place it immediately after the title page. The abstract must indicate clearly whether the thesis is a literature review or a thesis reporting original experimental work. The maximum length of the abstract is 350 words.

The abstract presents the most essential content of the thesis as well as its purpose, results and conclusions. A good abstract is logical and understandable independently of the thesis, and corresponds to the content of the thesis. Write the abstract in full sentences and use Finnish or Swedish terms whenever possible. Define abbreviations at first mention. Do not include references, figures, tables or subheadings in the abstract.

The thesis abstract also serves as a maturity test. Keep in mind that the abstract is the part of your thesis to which most of your readers pay most attention. Therefore, you should pay particular attention to its linguistic form, even though the flawless language skills required for public positions are formally demonstrated in conjunction with the Bachelor's thesis, for which an examiner provides feedback.

[\(Abstract form\)](#)

3.1 Abstract of a literature review

The abstract of a literature review must include the following information:

- Justification for choosing the topic: Why was it necessary to study the chosen problems?
- A brief presentation of essential current knowledge
- Conclusions: A brief discussion of the scientific and practical significance of the thesis. What purpose will the knowledge produced by the literature review serve?

3.2 Abstract of a thesis reporting original experimental work

The abstract of a thesis reporting original experimental work must include the following information:

- A brief presentation of the background and topic of the thesis and the justification for writing the thesis
- The aim and the hypothesis of the thesis
- A brief presentation of the material and its scope as well as of the methods
- Key results
- Conclusions and their justification: Did the result correspond to the hypothesis? What scientific significance or practical use and applications do the results have? If necessary, a brief discussion on the weaknesses of the premises

4 STRUCTURE OF THE THESIS

A literature review thesis contains a summary, a table of contents, an introduction, the actual literature review, a discussion and a bibliography. A thesis reporting original experimental work in turn includes a summary, a table of contents, an introduction, a literature review, the presentation of material and methods, the results, a discussion and a bibliography. If necessary, a thesis reporting original experimental work may also include separate chapters for the aims and conclusions of the research.

Place the table of contents immediately after the summary under the heading **Contents**.

The guidelines given below refer, where applicable, to both literature review theses and theses reporting original experimental work.

4.1 Introduction

The introduction describes the premises and research problems of the thesis, outlines the topic, and presents the aims and hypotheses.

4.2 Literature review

The literature review explains what is known about the topic on the basis of earlier research. When writing, refer primarily to original studies because original publications have studied the topic experimentally and present the findings in their results. You must justify the need for your own research by showing what kind of knowledge is still needed and what kind of research-based knowledge is not available at all. The literature review presents the topic and the methods that have been used to approach it in earlier research as well as the limitations of such methods. The aim of the literature review is to present a critical view of earlier research.

You can also use high-quality and up-to-date books and review articles as your sources. In many cases, official texts as well as various statements and memoranda may also be acceptable sources. You may consider using other sources on a case-by-case basis, but you should view them critically. When referring to unpublished material, you should indicate the name of the person from whom the information originated (e.g., Virtanen, personal communication) in the text. You should not cite personal communication in the bibliography and should use such sources only in exceptional cases.

You may include the discussion of the literature review thesis in the actual literature review or place it in a separate chapter after the actual review. However, you must clearly indicate which part of the discussion is based on existing literature and which part represents your own ideas.

4.3 Material and methods

You must document the quality, scope and origin of your material. If necessary, you may use tables and figures. If the methods are generally known in the field, describe their main features and refer to your source literature. If the methods are new or rare, describe them in a detailed fashion. Other researchers must be able to repeat your research on the basis of these descriptions.

If your research involves animals or animal specimens, mention the age, gender, species and population of the animals as well as other essential information. If outside factors, such as environmental factors, can be assumed to have influenced the results, describe them in relation to specimens taken or tests conducted. In addition, indicate whether you have obtained an animal experiment licence or are abiding by an ethical statement.

If a piece of equipment is of key importance for measuring, mention it by name and state the information regarding its manufacturer. Likewise, mention the manufacturers of key chemicals, such as antibodies. If you have used statistical methods, you must describe them. When you use generally known statistical methods, no references are necessary.

4.4 Results

You must present the results and their statistical significance. Do not repeat details in the text that are shown in tables or figures, such as numerical data. The Results section must not present conclusions based on your results or include comparisons to others' results, as these should appear in the **Discussion**.

4.5 Discussion

The Discussion interprets your own observations and their significance in the light of the results of earlier studies. It presents the scientific and practical significance of the results and describes the need for further research. Be realistic when reflecting on the generalisability and applicability of your results. You must also comment on the sufficiency and reliability of the material and the accuracy of the measuring methods. Do not present new results in the Discussion or refer to your own results not presented in the **Results**.

4.6 References

List all your sources (articles, books, electronic publications and so forth) in the same bibliography in alphabetical order according to the surname of the first author. Include in the bibliography references to all works cited in the text.

If you have referred to several publications from the same authors published in the same year, separate them from each other by adding a lower case alphabet after the year (e.g.,

a, b, c ...). Follow the same procedure for every reference in the text. If there are several publications from the same author (as the first author) in the bibliography, place them in order as follows: 1) List the publications in which the said author is the only author in chronological order; 2) List the publications in which the author is the second author in chronological order; 3) List the publications with three or more authors in chronological order.

If you cannot identify the author, use the name of the publisher, followed by the name of the publication. List legal provisions in alphabetical order according to their names, even though in official texts they are not usually listed in the bibliography at all. For electronic sources include the date of access as well as the information regarding their latest update if such information is available. Even though the examples below of different sources have been divided into their own subchapters to facilitate your finding the correct information, you must list all sources in the same bibliography.

5 THESIS LENGTH AND LAYOUT

5.1 Length and format

Excluding the bibliography and possible appendices, the recommended length of the thesis is 30–50 pages. In special circumstances, you may depart from this rule with your supervisor's consent. Use the following settings while writing your thesis: 12 for font size and 1.5 for line spacing. The finished thesis must be bound. Select the width of the margins so that enough space is left for binding: for a one-sided copy use 3.5 cm for the left margin and 2.5 cm for the right margin, and for a two-sided copy use 3.5 cm for the bound margin and 2.5 cm for the other margin. Leave 2 cm at the top of the page and 3 cm at the bottom. Start pagination from the introduction with page number 1. Place the page number either in the centre or the outside corner of the bottom of the page.

5.2 Subheadings and paragraphs

The use of the automatic text formatting in word processing programmes is not recommended. Write main headings in capital letters, and separate them from the preceding text with two empty lines. Add an empty line after the main heading. Number the main

headings, but do not use a full stop after the heading number (e.g., 3 MATERIAL AND METHODS). Write subheadings in lower case, and separate them from the preceding text with one empty line. Separate the different levels of headings with numbers (e.g., 3.3 Statistical methods).

In order to indicate division into paragraphs, you can use either the modern or classical division method, but remember to be consistent and use only one or the other. In the modern division, the first line of the paragraph begins at the left margin, and there is an empty line between each paragraph. In the classic division, there is no empty line between paragraphs, and the first line is indented (except for a paragraph following a heading). Avoid very short paragraphs.

5.3 Tables and figures

You must clearly separate tables and figures from the text. Do not repeat their information in the text. Number tables and figures in the order in which you refer to them in the text. The text must contain a reference to each table and figure (e.g., table 1, figure 1). Place the table or figure on the page on which you first refer to it or in a suitable place on the following pages. The table or figure is usually placed at the top or bottom rather than in the centre of the page.

You must attach a caption to tables and figures so that the reader is able to understand them without having to refer to the body text. Always place the table caption above the table and the figure caption below the figure.

The table caption begins with the number of the table and the figure caption with the number of the figure (e.g., Figure 1. The progesterone level of ...). Do not include headings in the actual figure. Explain any symbols and abbreviations in the tables or figures in the corresponding captions.

Do not use vertical lines in tables. Place horizontal lines at the top and bottom margins of the table as well as under the header line. If you have several header lines, place an individual horizontal line under each so that the length of the line indicates how many columns each heading refers to. If the figure is a diagram, do not frame it or draw coordinate lines with the exception of the x and y axes. Format the figure so that it can be easily interpreted in black and white (instead of colours, use screentone or other methods).

If you use figures that have already been published, you must justify their use. You can use such figures only to clarify or illustrate your argument (i.e., not to “decorate” the thesis), and you must always indicate their sources. You may use information that has already been published in your own figures or tables as long as you have clearly justified its use and stated the source. For more information on copyrights related to the use of figures, see <http://www.tekijanoikeus.fi>.

Substitute foreign terms for Finnish or Swedish ones if the former are generally known and precise.

You may use abbreviations if you repeatedly use terms that consist of several words or are otherwise long. When the term appears for the first time, write its abbreviation in brackets (unless you use it in a heading). After the first mention use only the abbreviation. If there are many abbreviations, you should prepare a separate list of abbreviations to be placed on a separate page after the Table of Contents. Use the heading **Abbreviations** for the list, but do not number the heading.

5.4 References

When you place references in the text, you may use two alternative methods. You may use both methods in the same text, which means that you may alternate between them as necessary. You can place the reference in brackets at the end of the sentence or, alternatively, use the reference as a part of the sentence. In the latter case, the author(s) functions as the subject of the sentence, while the year of the publication is given in brackets.

The format of the reference depends on the number of authors. If the source has only one author, give the name of the author and add the year. If there are two authors, give their names using the *and* conjunction and add the year. If there are three or more authors, give only the name of the first author, followed by *et al.* and the year. When you refer to a review article or a book, you must indicate that you are not talking about the original experimental work.

(Opsomer 1999)

(Opsomer & Leroy 2003)

(Opsomer et al. 1998)

(in the review by Opsomer et al. 2013)

If the reference functions as part of the sentence, pay attention to the use of singular and plural forms:

Opsomer (1999) states that ...

Opsomer et al. (1998) state that ...

In their review Opsomer et al. (2013) state that ...

Place the reference at the end of the sentence that contains the information referred to (before the full stop). Generally speaking, if the same sentence contains several separate references, place each reference immediately after the information contained in the reference (i.e., in the middle of the sentence, if necessary). In the same way, if the reference covers several sentences, place it at the end of the last relevant sentence (before the full stop). If the context does not indicate the number of sentences referred to, you must repeat the reference often enough to make this clear (i.e., as a sentence constituent at the beginning of the reference and again at the end of the last sentence, for instance). If you give several sources for the same information, write all references in the same brackets in chronological order (from the oldest to the newest). In case of articles published in the same year, give the references in alphabetical order according to the first author. Do not include any kind of punctuation between the authors and the year of publication. If you give several references in the same brackets, separate them with commas:

(Opsomer 1999, Opsomer et al. 2001)

When the text refers to legal provisions, use the name of the act or decree or its official abbreviation and the act or decree number. Capitalise the names of acts if they have an official English name (if not, use lower case letters). It is also customary to indicate the section and possibly the subsection as well. The words *chapter* and *paragraph* are not usually abbreviated.

The operators listed in subsection 1 of section 17 in the medicines act (395/1987) are allowed to import medicines.

Appeals against decisions based on the animal disease act (55/1980) must be submitted to the agricultural industry appeals board (Ministry of Agriculture and Forestry's Decision No 14/Animal health and food department/1999).

5.5 Format of different publications in the bibliography

5.5.1 Articles

Oksanen A, Soveri T, Nieminen M, Kumpula K. Pasta juttu – uutta tutkimustietoa poron lääkityksestä. *Suom Eläinlääkäri* 1991, 58: 22–23.

Sukura A, Soveri T, Lindberg L-A. Autolytic changes in myocardial cells. *Vet Rec* 1991, 128: 35–42.

Trent AM, Plumb D. Treatment of infectious arthritis and osteomyelitis. *Vet Clin North Am Food Anim Pract* 1991, 7: 747–778.

The official abbreviations of scientific journal titles can be found, for instance, at <http://library.caltech.edu/reference/abbreviations>.

Begin each abbreviated word with a capital letter, and do not use full stops.

5.5.2 Books

A whole book by the same author(s) (e.g., references to several places in the same book): Chrisman CL. *Problems in Small Animal Neurology*. 2nd ed. Lea & Febiger, Philadelphia 1991.

A chapter in a book by several authors and an editor or editors: Dee JF, Dee LG, Eaton-Wells RD. Injuries of high performance dogs. In Whittick WG (ed.) *Canine Orthopedics*. 2nd ed. Lea & Febiger, Philadelphia 1990: 519–570.

5.5.3 Congress abstracts

Honkavaara JH, Raekallio RM, Vainio OM. The peripheral alpha2-adrenergic antagonist L659,066 prevents the early dexmedetomidine-induced cardiopulmonary effects in sheep. *Proceedings of the 9th World Congress of Veterinary Anaesthesiology*, Santos, Brazil, 2006: 158.

5.5.4 Provisions

Appeals against decisions based on the animal disease act. Ministry of Agriculture and Forestry's Decision No 14/Animal health and food department/1999.

http://www.mmm.fi/attachments/elo_elainlaakintolainsaadanto/d-osio/6DXZFv1Ao/skmbt_c45008100113590.pdf, accessed on 26 Nov 2013.

Directive 2001/82/EC of the European Parliament and of the Council on the Community code relating to veterinary medicinal products. Official Journal of the European Communities L 311, 28 Nov 2001: 1–66. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:311:0001:0001:FI:PDF>, accessed on 26 Nov 2013.

Lääkelaki 395/87 (medicines act 395/87), as amended.

<http://www.finlex.fi/fi/laki/ajantasa/1987/19870395> (in Finnish), accessed on 26 Nov 2013.

5.5.5 Other electronic publications

EMA. Veterinary Medicines. MRL summary reports (EPMARs).

http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/landing/vet_mrl_search.jsp, accessed on 26 Nov 2013.

Finnish Food Safety Authority (Evira 2012a). Eläintautien vastustaminen ja valvonta.

<http://www.evira.fi/portal/fi/elaimet/elainten+terveys+ja+elaintaudit/elaintautien+vastustaminen+ja+valvonta/>, accessed on 26 Nov 2013, updated on 30 May 2013.

Finnish Food Safety Authority (Evira 2012b). Tuonti ja vienti: Traces.

<http://www.evira.fi/portal/fi/elintarvikkeet/tuonti+ja+vienti/tuonti+eu+n+ulkopuolelta/traces>, accessed on 26 Nov 2013, updated on 27 Nov 2012.

6 LICENTIATE SEMINAR

6.1 Aims and content

By giving an accepted seminar presentation, students show that they are capable of mastering the basic principles of scientific presentation and the use of AV equipment. Students are capable of mastering their research topics in a way that enables them to pre-

sent their work to other students of veterinary medicine in a limited time, to discuss the topic with their audience as well as to receive feedback from the opponent and to respond to it constructively.

Students present the most significant sections of their licentiate thesis in the form of a scientific oral presentation. The main focus of the presentation is on the results and their significance, but the background and the methods should be presented to the extent that a person unfamiliar with the topic is able to follow the presentation. Before the presentation, you should take into consideration the composition of your audience, i.e., who the listeners are (students from different years), what their level of knowledge regarding the topic is and so forth, and calculate the length of the presentation accordingly.

The presentation material is intended to support the oral presentation. Visual materials should be prepared in a format suitable for presentation using a video projector. The University of Helsinki's visual identity bank at <http://hy.logodomain.com/&lang=en> (accessible only through the University network) contains the Faculty of Veterinary Medicine's PowerPoint templates, which are available for use.

When designing the layout of your slides, keep in mind that figures and diagrams are often more illustrative than text. In other words, you do not need to write out everything you wish to convey. Slides must be clear and easy to understand. In order to ensure this, keep the text concise, use clear figures, tables and other graphic elements, and choose a colour scheme that does not interfere with readability. The font size must be big enough for the text to be visible at the back of the room. The overall number of slides and the content of individual slides must be limited so that the listeners have time to assimilate the content of each slide before moving on to the next one. Since the interpretation of tables and diagrams, in particular, often takes longer than expected, it is useful to highlight their main findings in your speech.

As applicable, the seminar presentation should adhere to the following structure:

1. Greeting the audience ("Dear listeners, ...", for instance)
2. The title of the presentation, the name of the speaker, research location
3. The presentation of the research background so that the listeners are able to understand the significance of the work
4. The key aims and the hypothesis of the study

5. The research methods and, if necessary, their main principles
6. Results
7. Discussion
8. Conclusions
9. Acknowledgments

6.2 Length and evaluation

The length of the seminar presentation is 20 minutes (neither more nor less), after which there is 10 minutes for the opponent's observations and the related discussion. Such a tight schedule is a common scientific practice followed in many international congresses. The tight schedule may come as a surprise if you have not given a presentation in a limited time before. Therefore, you should practise your presentation in advance, and use a clock or a watch to see how long it takes. You should also pay attention to the clarity of your speech and other matters related to presentation techniques. The supervisor of the licentiate thesis shall grade the seminar presentation on a scale of pass/fail.

6.3 Opponent's checklist

When evaluating the work, the opponent must pay attention to the following (Y=Yes, N=No):

General observations on the whole text

Are the structure and layout in accordance with the guidelines? Y/N

Have the abbreviations been written out when necessary? Y/N

Have the terms been specified precisely and are they used correctly? Y/N

Are there too many informal expressions or foreign terms? Y/N

Are the sentences understandable and grammatically correct? Y/N

Are the paragraphs understandable and logical? Y/N

Are the figures and tables as well as their captions understandable by themselves? Y/N

Are all the figures and tables necessary? Y/N

Are all references in the correct format in the text? Y/N

Is the order of presentation logical? Y/N

Title

Does it describe the contents of the manuscript well enough? Y/N

Is it too long? Y/N

Summary

Does it describe well enough what was done and what the findings were? Y/N

Does it provide a good overall description of the work? Y/N

Is it logical and understandable by itself? Y/N

Is there something that is not included in the text? Y/N

Have all the essential conclusions been presented? Y/N

Introduction

Has all the essential and necessary background information been presented? Y/N

Is the definition of the topic justified? Y/N

Has the aim of the work been clearly specified? Y/N

Has the hypothesis of the study been specified? Y/N

Literature review

Is the order of presentation logical? Y/N

Is there something significant that is missing from the reader's point of view? Y/N

Is there something that is insignificant in terms of the topic? Y/N

Have the sources of information been acknowledged using references if necessary? Y/N

Has the author referred primarily to original studies? Y/N

Is it clear where the author's own thoughts and opinions are expressed? Y/N

Material and methods

Have the premises been described clearly and unambiguously? Y/N

Have the experimental arrangements been described clearly and unambiguously? Y/N

Has the research material been described clearly and unambiguously? Y/N

Have the methods been described clearly and unambiguously? Y/N

Has the study been planned and implemented in a fit-for-purpose fashion? Y/N

Is the experiment repeatable on the basis of its description? Y/N

Have appropriate statistical methods been utilised? Y/N

Results

Have all the essential results of the measurements and tests described in **Material and methods** been presented? Y/N

Are there results whose methods have not been described? Y/N

Does the text repeat results evident from figures or tables? Y/N

Should there be more statistical tests or comparisons? Y/N

Is it clear to the reader which results are statistically significant and which are not? Y/N

Have the possible complications been described? Y/N

Does this chapter include content that should be in the **Discussion** or **Material and methods**? Y/N

Discussion

Has the author discussed all his or her own key results? Y/N

Does the discussion include irrelevant information? Y/N

Have the results been compared to the most relevant literature? Y/N

Are there other possible explanations for the results? Y/N

Have the strengths and weaknesses of the methods been discussed? Y/N

Is there information that should be included in the introduction? Y/N

Is there background information that belongs to the literature review? Y/N

Are there “new” results that belong to the **Results**? Y/N

Has the author tried to answer the questions he or she asks in the introduction? Y/N

Have the conclusions been justified logically? Y/N

If the conclusions have not been presented to the reader, should they be? Y/N

Sources

Has the bibliography been prepared using the right format and has the same style been applied systematically? Y/N

Have the sources for all references been included in the bibliography? Y/N

Are there entries that have not been referred to in the text? Y/N