UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI MEDICINA VETERINARIA
E SCIENZE ANIMALI

divas

The Veterinary Medicine Degree Thesis:

Guidelines for Students

Master Degree Course in Veterinary Medicine

Department of Veterinary Medicine and Animal Sciences (DIVAS)

University of Milan

Edited by

Silvia Clotilde Modina, Vitaliano Borromeo, Clara Palestrini, Camilla Recordati, Maria Cristina Veronesi, Eugenio Scanziani

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1. THE DEGREE THESIS

1.1. Definition

The degree thesis is a written dissertation, prepared in Italian or English, produced independently by a graduating student under the supervision of a supervisor, on a topic consistent with the educational objectives of the Master's Degree Course in Veterinary Medicine. The thesis must be an original work derived from participation in experimental projects or from current, comprehensive and in-depth bibliographic research. The

dissertation is publicly discussed during a final examination in front of an appointed committee. This represents the final act of the student's academic career: the degree committee, after approving the thesis, confers the title of *Doctor in Veterinary Medicine* to the candidate.

On the webpage dedicated to the degree examination of the Veterinary Medicine Course at the University of Milan (https://veterinaria.cdl.unimi.it/it/studiare/laurearsi) updated information can be found on administrative procedures for submitting the degree application, calendars of the degree examination sessions, and deadlines for submitting thesis applications and completing examinations.

1.2. Experimental thesis and compilation thesis

There are two types of theses: the experimental thesis and the compilation thesis.

An **experimental thesis** involves practical fieldwork, clinical work, or laboratory activities (sometimes combined), aimed at collecting original data that will then be presented in the written dissertation.
The **compilation thesis***,* on the other hand, consists of the organised, concise, and critical collection of data from the scientific literature concerning a specific topic. It is therefore essentially based on reading and analysing scientific articles and books.

1.3. The key figures

The **thesis student** is the student preparing the degree thesis. The **graduating student** is the student who has completed all exams and is ready to defend the thesis.
The **supervisor** is a member of the Department who guides the candidate in carrying out and writing the thesis. The supervisor also introduces the candidate to the committee during the thesis defence. Sometimes, a **co-supervisor** assists the supervisor; this may be another researcher within the Department or an external researcher/professional with whom the student has carried out the thesis.
The **reviewer** is a member of the Department, chosen by the programme coordinator based on their specific expertise, to evaluate, judge, and critically discuss the thesis. They receive the written dissertation from the candidate about a week before the defence. The student must contact the reviewer as soon as they receive notice of the degree committee to send them the PDF of the thesis and, if necessary, arrange a meeting.

The **degree committee** is composed of at least five members selected from the professors and researchers of the Department. It generally includes the supervisors, co-supervisors (if they belong to the academic staff), and reviewers of the candidates for a given graduation session. The most senior full professor serves as the **chair of the committee**. External co-supervisors participate only in the discussion of the thesis for which they are co-supervisors.

1.4. When to apply for the thesis

At least one year before the expected graduation date, it is advisable to choose the thesis topic and supervisor. This allows the student to gain an overview of most courses and lecturers and to understand which subjects or professors are of greatest interest. Starting thesis work early also allows students who realise they have made the wrong choice to change topic in time—something that is not a problem if done early enough—thus avoiding delays in graduation or wasting the supervisor's time.
Before the fourth year, or if several exams are still pending, it is better to focus on coursework, placements, and exams, while still remaining *curious* and exploring possible topics, places, activities, or lecturers that might be suitable. Choosing too early can involve some risks:

- not considering fields that are still unfamiliar;
- devoting time to thesis work when it should instead be spent attending courses and studying;
- focusing one's interests solely on thesis-related subjects, neglecting others.
  It is important to approach every course and exam with full commitment and interest, regardless of the chosen specialisation after graduation.

1.5. Choosing the topic and the supervisor

On the course website, there is a list of available thesis topics and the corresponding professors willing to act as supervisors. The list is regularly updated by the academic service, which collects information directly from each professor.

Publishing available topics is optional for professors, so there may be other topics and supervisors available that do not appear in the list. If a student has a specific interest, they can contact the professorresponsible for that area—even if not listed—and ask about possible thesis opportunities. The purpose of the list is to help students find available thesis topics and to allow professors—especially those from basic subjects or early-year courses, or those carrying out veterinary research not immediately apparent in their teaching—to "recruit" students who might have forgotten earlier coursework or are unaware, for example, that an anatomist may study tissue regeneration models or a chemist may work on food control analysis. In practice, the list aims to facilitate the matching of thesis supply and demand within the degree programme.
It is difficult to provide precise guidance on how to choose a thesis topic, but the following considerations may be useful:

- make a list of topics of interest;
- from that list, focus only on topics that suit one's aptitudes. One should avoid the mistake of those who, though tone-deaf, wish to be singers. To give a veterinary example, if one is colour-blind, it is better not to become a histopathologist. Sometimes it is difficult to recognise one's strengths; self-assessment is often biased. It may help to seek the honest opinion of two or three trusted people.

It is also a good idea to:

- consider the grades obtained in individual exams, which may indicate one's inclinations;
- seek information from recent graduates or students already working on their theses about timelines, methods, and their personal experiences in different fields.

Once a general but not final decision has been made, it is time to meet with the professor of interest. The student should present their ideas, plans, and doubts during this meeting.

1.6. Duration and workload

According to the Degree Programme Regulations, the time students spend at a university facility carrying out their thesis work corresponds to 6 university credits (ECTS) (7 ECTS for students enrolled before the 2019/2020 academic year), equivalent to 150 hours of practical and study activities.
It is difficult to quantify exactly how much time a student must devote to their thesis work, and especially for experimental theses, students often exceed the 150-hour guideline. However, this serves as an important reference to prevent thesis work from delaying graduation and extending the overall study period.
That said, it is often an invaluable learning experience for the student—one to be approached with patience and dedication, making the best possible effort for many reasons, not least because the ECTS assigned to the final examination account for about 10% of the final degree mark!

The actual time spent on the thesis is ultimately a decision to be made jointly by the student and the supervisor. In particular, for experimental theses, the mode and timing of attendance at the facilities where the research will take place can vary widely depending on the topic and structure chosen. It is also important to remember that precise scheduling is not always possible: gathering a sufficient number of cases or fine-tuning a method may take just a few days—or several months.

2. THE EXPERIMENTAL THESIS

The experimental thesis work consists of several stages:

1. The first stage corresponds to adequate theoretical preparation on the topic to be addressed. This means, once again, studying. The supervisor will provide the main scientific articles or book chapters that illustrate the current state of knowledge on the thesis topic.
2. The second stage involves defining the research design. The supervisor will give guidance on the material to be collected (what, how much, and how) and on the methods to be applied to this material.
3. The third stage consists of collecting the research data, often carried out directly by the student.

2.1. Safety, biosecurity and authorisations

Working in the field (whether clinical, laboratory, or farm-based) exposes one to various risks (physical, chemical, and biological). Therefore, before starting any practical work, it is necessary to inform the safety officer of the facility where the activity will take place, who will provide the internal student with the appropriate information.
If the thesis work takes place, even partially, in facilities outside the University, it is necessary to present the host institution with the training project for the thesis and certain documents, as well as to obtain specific authorisations: a release form for the publication of images (which must not include identifiable staff members and may only be used for the thesis), consent for personal data processing, a certificate of general safety training, and, in some cases—for example, when carrying out a training project at the local health authority (ATS)—a preventive medical examination by the Occupational Health Physician may be required.

To access the facilities, good hygiene and safety practices must be followed, as indicated by the host institution and signed by the student, who thus undertakes to comply with them. These include wearing suitable protective clothing (e.g. lab coat, safety shoes and overshoes, gloves, hair cap, etc.), which may vary depending on the facility and must be replaced or sanitised between uses. For obvious biosecurity reasons, protective clothing must be put on within the so-called filter area or changing room, so that contaminants are not introduced from outside. Inside the facility, the student must follow the supervisor's instructions and all signage, accessing only authorised areas and avoiding interference with ongoing activities.

Finally, if the student uses their own vehicle, they must follow the supervisor's directions and park outside the facility or ensure the vehicle is disinfected before entry to prevent the spread of pathogenic microorganisms (e.g. African Swine Fever virus, ASF). In certain cases, students may be required to avoid contact with susceptible animals or other farms housing such species—for example, pigs, due to the ASF issue.

2.2. The different sections

It is advisable to divide the thesis into the same well-established sections used in all scientific papers: *introduction, materials and methods, results, discussion.* To these four main parts, optional sections may be added, such as *the aim of the thesis* (at the end of the introduction), *conclusions* (at the end of the discussion), and additional elements such as the *title, table of contents, preface, abstract, references,* and *acknowledgements.*
The definition of these four main sections is so straightforward that it might seem impossible to misplace content (e.g. including methods within results). Yet, it is rare to find a thesis entirely free of such errors. During the writing process, when reviewing what has been written, it is useful to ask—sentence by sentence—"Which section does this belong to?" Below are the various parts of the thesis, with definitions and some advice on how to approach them.

Title

The first step is to define the thesis topic, generally referred to as the title. In most cases, the supervisor proposes one or more possible titles to the candidate based on ongoing or planned research. Sometimes the student suggests a topic; more often, they simply indicate their interests. The title should concisely yet clearly outline the subject of the thesis.

Although the title is usually decided at the start of the project, even as a draft, it often becomes the last element to be finalised before submission. It is very important to have a draft title both during the research and writing phases; from time to time, it is worth rereading it carefully to check whether the work is staying on track or drifting "off-topic". The final title must be complete, concise, and informative.

How to do this? Write down all the key words related to the thesis (around 5 to 10) and then arrange them into a coherent phrase. Titles can be short (e.g. *Renal leptospirosis in pigs*) or more detailed (*Preliminary observations on renal lesions in pigs affected by leptospirosis at Lombardy slaughterhouses*). Reading titles from previous theses (even on different topics) can provide useful inspiration.

Abstract

The abstract is a concise yet comprehensive summary of the thesis. It serves as the "calling card" of the work—the quality of a thesis is often reflected in its abstract and how it is written. It appears at the beginning of the thesis but should be written last, once all sections are complete.
It is helpful to divide it into short paragraphs briefly describing the introduction (relevance of the topic), aim, materials and methods, results, and conclusions. The abstract should not exceed one page.

Table of contents

The table of contents lists the sections of the thesis with their corresponding page numbers.

It usually appears at the beginning of the thesis, right after the title page, and is drafted last, once all additions, deletions, and corrections have been made. Its purpose is, of course, to make the thesis more accessible for readers and the reviewer.

Word and other writing programmes can automatically generate an updated table of contents using the appropriate command. To do this effectively, it is important to structure the document properly from the beginning by assigning a hierarchical order and style to headings and subheadings. These and other useful techniques are taught in workshops organised annually by the University Library—strongly recommended to all students (https://www.sba.unimi.it/).

Preface

It is good practice to precede the main text with a short preface (about half a page) explaining the scientific or professional interest that justifies the chosen topic. Bibliographic citations are not included in the preface.

Introduction (or literature review)

This section provides an updated summary of current knowledge on the thesis topic, indicating the studies that have contributed to this knowledge. The final part explains the reasons that justify the research **(the aim of the thesis)**. A separate, short chapter may be dedicated to the aim, which, although brief, is important.

In degree theses, the introduction is generally more extensive than in journal articles. This allows the student enough space to present the scientific background necessary to understand the research. For this reason, figures and tables may be included in the introduction—something usually not done in published papers.

It is useful to divide the introduction into subsections. Each concept or original data point must be supported by one or more references, which should be added immediately to avoid omission. Direct quotations from publications may also be included, provided the source is cited.

Materials and methods

This section provides a meticulous description of all materials used and the methods applied during the research. Materials include the cases studied (animals, organs, samples, etc.).

The style should resemble that of a recipe—perhaps tedious for casual readers but invaluable for those wishing to replicate the work. As with any recipe, attention to quantities and details is essential. Subsections may be used. Some non-essential aspects may be omitted with reference to appropriate sources.

Results

This section provides a concise, orderly, and honest account of observations. Subsections may be used. No interpretations or discussions should appear here. References to figures and tables must be included appropriately; these should be numbered (in separate lists) in

order of appearance. It is advisable to number figures and tables according to the chapter, e.g. in the introduction Fig. 1.1, in the results Fig. 4.1.

Discussion

This is where the observed results are considered referring existing knowledge. It allows for comparisons with other studies (agreeing or differing), identification of mechanisms (e.g. etiopathogenetic), theoretical speculations, recognition of study limitations, and suggestions for further research to confirm or better understand the findings.

References

This section lists all references in order.

Although often considered the most tedious part of the thesis, and therefore sometimes neglected, it is in fact one of the most important. A single error in a name, year, volume, or page number can make it impossible for a reader to locate the source. The accuracy of the reference list is an excellent indicator of the quality of scientific work, following the simple equation: well-written references = good scientific work.

Acknowledgements and dedication

Acknowledgements should primarily serve to give formal thanks to individuals or institutions that provided scientific or technical contributions to the thesis. The supervisor should not be thanked—if they have taught, supported, encouraged (and perhaps scolded), they have merely fulfilled their duty.

Those who provided material or actively participated in the research (almost all current studies involve a team) should, however, be acknowledged, with full name, title, institution, and the reason for acknowledgement (e.g. *Thanks to Dr Franco Rossi from the Serological Institute of Pavia for preparing the anti-GH serum*).

A short phrase or the name of a person may be included as a **dedication** on a separate page between the title page and the first page of text.

3. THE COMPILATION THESIS

The compilation degree thesis is an in-depth, comprehensive, and re-elaborated analysis of the scientific literature on a specific topic.

The collection and thorough reading of the relevant bibliography must be completed before drafting the thesis. A useful guide for bibliographic research and thesis writing is provided by the online courses available from the University of Milan's digital library (https://www.sba.unimi.it/Strumenti/10546.html).

The choice of topic may arise from a personal interest in a specific subject, from the desire to explore a theme covered during courses, or from the wish to investigate a topic considered particularly useful for one's future professional career. Moreover, the thesis topic must be agreed upon with the supervisor: it may be requested (proposed) by the student or suggested by the supervisor.

3.1. The different sections

Title (see experimental thesis)

After defining the title, even just as a draft, it is necessary to create an **outline of the topics** to be covered, perhaps using as a model a book chapter or a scientific review particularly focused on the thesis subject.

Table of contents (see experimental thesis)

Preface (see experimental thesis)

Literature review

The following text, in which the thesis topic is discussed in depth, should be divided into chapters and subchapters containing a detailed **review of the literature** relating to the chosen subject. The text should be thoughtfully constructed, clearly developed, and include connections between the various aspects while maintaining a critical and constructive approach.

The **bibliographic research**, which is the foundation of the compilation thesis, must be adequate, comprehensive, and above all up to date. Textbooks may also be used, especially as a starting point, but most of the scientific sources should consist of research articles.

When drafting the text, it is important to always keep in mind the title and keywords to avoid drifting into unrelated topics or, conversely, forgetting to cover important ones. Every

concept or original piece of data must be supported by one or more references: these should be written down immediately, otherwise they are easily forgotten. A particularly significant sentence may be quoted verbatim provided it is placed *in quotation marks,* and the source is cited.

The use of photographs, drawings, figures, and tables is permitted, provided that the source is always cited.

Conclusions

At the end of the literature review, it is good practice to conclude the thesis with about half a page in which the graduating student comments on and draws conclusions from what has been discussed previously. For example, the strengths and weaknesses of the available literature on the chosen topic, possible future developments, and so on.

References (see experimental thesis)

Acknowledgements and dedication (see experimental thesis)

4. WRITING THE THESIS: PRACTICAL ADVICE

4.1. Language

The final examination may be conducted in English; likewise, the written dissertation required for the Bachelor's Degree and the thesis required for the Master's Degree may be written in English.

4.2. Bibliographic Research

Bibliographic research plays a key role in writing an experimental thesis and, even more so, in a review thesis. Its purpose is to identify, select, and gather from reliable sources all the information specifically related to the thesis topic. A solid bibliographic research will make managing the thesis work easier, helping both in carrying out the practical part and in writing the dissertation. It is therefore essential to devote particular attention to it. The bibliographic material needed is usually drawn from books, articles published in scientific journals, and, to a lesser extent, from online sources. In most cases, bibliographic sources are in English.

At present, thanks to the widespread availability of digital databases and the computerisation of archives, bibliographic research is fast and convenient. The University of Milan Library Service offers regular courses (both online and in person) to learn how to conduct bibliographic research [University Library Service – Library Courses (unimi.it)]. It is advisable to attend these courses before starting your own bibliographic search to make full use of the library services provided by the University and the various databases. The supervisor may also provide further guidance on where to find specific materials, particularly when dealing with highly specialised topics.

Databases are search engines tailored to a specific disciplinary context. Some are open-access, while others require a subscription and can therefore be accessed through the University's Digital Library (Minerva) via this link: [University Library Service – Digital Library (unimi.it)].

Among the various databases, the best known and most widely used in the medical and biological sciences is *PubMed*, accessible via the following link: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed. PubMed is an open-access database, although some publications may not be available for full consultation. However, by accessing PubMed (or other databases) through the University's Digital Library service, it is possible to consult all articles published in journals to which the University subscribes.

Another increasingly popular search engine is *Google Scholar*, which is freely accessible and allows users to locate academic texts such as articles, theses, dissertations, books, preprints, abstracts, reviews, and technical reports across all areas of scientific and technological research.

In general, it is useful to know that authors of scientific papers are required, at the time of publication, to include a number of keywords—always in English—that are representative of the work itself. For example, a paper entitled *"Nucleotide sequence of hexon gene of fowl*

adenovirus associated with hydropericardium syndrome" may have the following keywords: *"Fowl adenovirus, hexon protein, nucleotide sequence, hydropericardium syndrome."* If you are conducting research on *hydropericardium syndrome*, entering this term into the databases will generate a list of published papers on the topic, including the one mentioned above.

Below are some operational notes on using PubMed, though for further details it is recommended to attend the courses organised by the Library Service. When accessing PubMed, you will see a page where you can type the keywords of interest in the "search for" field. Once the keywords are entered, PubMed will provide a list of papers published in various international journals, arranged chronologically, with all the necessary references. Specifically, the title, authors, and the international abbreviation of the journal, along with year, volume, and page numbers, will appear. Most papers also include an abstract summarising the key findings, which will help you select the publications of interest. By appropriately combining multiple keywords, you can refine the bibliographic search and make it more selective. To identify relevant articles, rely on the relevance of the title to the topic searched and a quick reading of the abstract.

Once you have identified the papers you wish to consult in full, it is advisable to discuss them with your supervisor to avoid being too superficial or, conversely, getting lost in the *mare magnum* of scientific publications.

After selecting the papers, download and archive them in an organised way. Archiving can be done freely (according to a preferred criterion, e.g. chronological order) or using dedicated software (e.g. *Mendeley*). This ensures that your material remains organised and easily accessible, facilitating thesis writing. If an article is not available in digital format, it can be requested from the Library Service. To refine bibliographic research, it is advisable to start by reading so-called *review articles* (papers devoted to reviewing the literature on a given topic), prioritising the most recent ones. As you read, you will quickly realise that the reference lists are a treasure trove of information from which you can draw inspiration for further insights relevant to your thesis.

4.3. Plagiarism

Anyone who has created a source of information has the legal right to be recognised as its creator. These are the moral rights of the author, as established by the *Copyright Amendment (Moral Rights) Act 2000*. If you claim someone else's work as your own without citing the source, you are effectively "stealing" the author's moral rights. This is a serious offence and is called *plagiarism*. There are many software tools capable of detecting plagiarism (for example, UNIMI uses *Compilatio.net*). Therefore, it is highly likely that anyone attempting to use others' work without proper citation will be discovered. For the introduction and discussion sections, it is acceptable for a student to "borrow" text from consulted sources, but it is essential always to cite the reference.

4.4. General Style

The style should be concise, clear, and scientifically accurate. Achieving this often requires writing in a way that differs (and sometimes contrasts) from what is generally considered good prose.
Sentences should be short. Terms must be used consistently without fear of repetition. For example, if you decide to use "pigs", do not alternate with "swine", and vice versa. Similarly, in the results section, do not hesitate to repeat "was observed" and avoid synonyms such as *noted*, *recorded*, or *documented*. Avoid paraphrases (e.g. "the bacillus of Hansen" for *Mycobacterium leprae*; "the two famous Australian researchers awarded the Nobel Prize for Medicine" for *Warren R.* and *Marshall B.J.*).

The length of the various parts of the thesis differs considerably (Table 1), with the introduction (or literature review) generally being the most extensive. The use of bullet points or tables can make certain sections clearer and more structured. It is also possible, in some parts of the thesis, to divide the text into sub-chapters (see Table 1). The time required for each section also varies, and some general recommendations are schematically shown in Table 1.

Table 1 - General guidelines regarding the length and features of the different parts of the thesis.

Parts of the thesis	**Tenses to be used**	**Subdivision into subchapters**	**Figures and tables**	**Lists**	**Relative length**
introduction	present and past	yes	yes	yes	45%
aim (o)	present	no	no	yes (o)	
materials and methods	past	yes (o)	yes (f)	yes (o)	15%
results	past	yes (o)	yes	yes (o)	20%
discussion	present, past and future	no	no	yes (o)	20%
conclusions (o)	present e future	no	no	yes (o)	

(f) = optional

4.5. The division into hierarchical elements

As has been seen, the written work is divided into main parts, which are in turn subdivided into various levels. These subdivisions must adhere to precise hierarchical rules.

The first level of subdivision is that of **chapters** (Introduction, Materials and Methods, Results, Discussion), to which other parts can also be assimilated (e.g., References, Acknowledgements).

As mentioned above (Table 1), some chapters can be subdivided into **subchapters** or **sections**. Subchapters or sections can, in turn, be divided into **subsections**. All these subdivisions are introduced by a title featuring a graphical identification that clarifies their hierarchy (Table 2). As shown in the example in Table 2, it is also possible to associate a progressive numbering for each type of subdivision. The graphical organisation of this hierarchy can be automatically performed by the word processing software, as already mentioned regarding the index.

Tab. 2 - Hierarchical division of the thesis with corresponding graphical examples

level	**Graphic style**	**Example**
I chapter	font size 16, uppercase, bold, centred	**1. INTRODUDUCTION**
II sub-chapter or section	font size 14, bold, centred	**1.1 Ethogram**
III subsection	font size12, bold	**1.1.1. Maternal behaviour**

Within the various subdivisions, there are **paragraphs**, each composed of one or more sentences that address a single, specific topic. Every paragraph can be regarded as a potentially autonomous unit. Paragraphs represent the fundamental building blocks of any scientific text: they are like bricks that, when properly arranged, form a solid house. The end of each paragraph is indicated by a line break. A new paragraph is marked either by an indentation shifting the starting margin to the right (**new paragraph indent**) or by a special (increased) line spacing. Indentation is not required at the beginning of each subdivision (chapter, sub-chapter, or subsection).

4.6. How and Where to Begin, and How to Proceed

Starting to write is always a difficult moment. There is no need to worry — it is important to remember that what you are producing at first is only a completely provisional draft. It is advisable to begin with the Materials and Methods section, identifying a part (a sub-chapter) that is short, simple, and can be inspired by another thesis or publication (which must, of course, be duly cited), introducing the necessary modifications.

Once the first sub-chapter has been written, it should be submitted to your supervisor for correction, and you should wait for their feedback before proceeding further. It is essential to make good use of these corrections: this means not merely inserting the supervisor's revisions into the text, but understanding the reason for them, to avoid repeating the same mistakes in later sections. The process should continue one sub-chapter at a time, each being corrected as you go along until the Materials and Methods section is completed.

At that point, it is time to begin writing the **Introduction**. After selecting a sub-chapter, you should outline the main points to be covered. Then, take one item from the outline — not necessarily the first one, but whichever you find most suitable — and list the things to be discussed according to a logical order. Each item can be developed independently: when working on a specific topic, consult all the relevant articles and include within your outline all the pertinent information you find. Do not forget to insert the bibliographic reference in the appropriate place within the text.

Once all the items in the outline have been written, each of them should be regarded as a "paragraph", to be arranged in the correct order: in this way, the first sub-chapter of the Introduction will be constructed. After gaining this initial experience, writing the second sub-chapter will be considerably easier. Do not forget to submit each sub-chapter for correction as soon as it is completed.

For an experimental thesis, it is advisable to divide the **Results** section into sub-chapters, following the same structure as in the Materials and Methods. The **Discussion** is the most difficult part to write. As with the Introduction, it is helpful to review all the relevant works on the subject. You should reread your own results and compare them with those of other researchers. Then, make a list of the points you consider worthy of discussion. For each point, review the pertinent bibliography and comment on your findings. Finally, assemble all the points, ensuring that there is a coherent logical flow. It is essential to focus carefully on the Discussion, allowing sufficient time and space, without rushing. A good strategy is to write, let the text "settle" (for a day or more), and then review it critically, making the necessary revisions.

The list included in the **References** section must contain all the works cited in the text — and, equally importantly, no others. At the end of the thesis, a careful cross-check is essential. The list should be ordered alphabetically by author and by year.

There is no single correct way to present references; what truly matters is to choose a simple and clear format and use it consistently. For instance, if you decide to abbreviate journal names, this should be done for all references. Table 3 shows a model for citing different types of references. Table 4 schematically illustrates the various parts that make up a reference to a journal article.

To manage, organise, and correctly cite references within the text, specific software tools can be used during the writing process. A widely used free software in the medical field for creating bibliographies is Mendeley (https://www.mendeley.com/download-mendeley-desktop). Through Mendeley, it is possible to archive collected documents in an orderly manner, cite them in the text (using Word's built-in function), and automatically insert them into the References section.

Tab. 3 - Various Types of References with Corresponding Examples of the Format to Use

Type of references	**Example**
Journal article	Henry GA, Long PH, Burns JL, Charbonneau DL. Gastric spirillosis in beagles. Am J Vet Res, 48: 831-836, 1987.
Book	Witter RL, Schat KA. Marek's Disease. In: Diseases of Poultry. Saif YM, Barnes HJ, Glisson JR, Fadly AM, McDougald LR, Swayne DE, Eds. 11th edn (pp.407-465). Iowa State Press Ames, 2003.
Conference communication	Hafez MM, Schulze D, Kösters J. Surveillance on verotoxin producing Escherichia coli in broiler flocks and processing plants. Proceedings of the 11th International Congress of the Veterinary Poultry Association (p. 101). Budapest, Hungary, 9–11 October 1997.
Web-accessible document	http://www.ncbi.nlm.nih.gov/ICTVdb/index.htm
Personal communication	Nigrelli AD. Personal communication. 1980.

Tab. 4 - Components of a Reference for a Journal Article

Type of information	**Parts of references**
Author (s): Surname, initials	Henry GA, Long PH, Burns JL, Charbonneau DL
Title of the article	Gastric spirillosis in beagles.
Journal (abbreviated)	Am J Vet Res,
Journal volume	48:
First and last page of the article	831-836,
Year of publication	1987.

4.7. Formatting

Italics

Italics are used for:

- all terms in foreign languages that are not commonly used in English (e.g., "smog") or within the discipline of the thesis (e.g., "trimming" in pathology);

- all Latin terms;
- Linnaean nomenclature (see "Nomenclature of Animals and Microorganisms");
- virus family and genus names;
- gene names (see "Nomenclature of Genes and Proteins in Vertebrates").

Nomenclature of Genes and Proteins in Vertebrates

The following is the standard style for writing genes, proteins, and abbreviations in vertebrates, accepted by most researchers and journals:

- Full gene names: lowercase (e.g., sonic hedgehog). Note: to distinguish from the protein, always specify (e.g., the sonic hedgehog gene).
- Full protein names: lowercase (e.g., sonic hedgehog). To distinguish from the gene, always specify (e.g., the sonic hedgehog protein).
- Gene abbreviations:
    - o Humans: uppercase italics (e.g., SHH);
    - o Other species: italics with the first letter capitalised (e.g., *Shh*). mRNAs and cDNAs follow the same rule, followed by the relevant descriptor (e.g., in humans *SHH* mRNA, in other species *Shh* mRNA). If the abbreviation is followed by the word "gene," italics may be omitted. Example: "*SHH* gene" is equivalent to writing "*SHH*" in humans and "*Shh*" in other species.
- Protein abbreviations: uppercase non-italicised (e.g., SHH).

Names of Animals and Microorganisms

For domestic animals, the common name is generally sufficient, though it is often useful to specify a particular category regarding breeding type, purpose, or use (e.g., for cattle: calf, young bull, heifer, adult bovine, cow, bull, meat breed, dairy breed, etc.). For non-domestic animals and all other living beings, the species must be precisely identified the first time it is cited, adding the Linnaean name (e.g., the camel (*Camelus bactrianus*).

Metazoan parasites, protozoa, yeasts, fungi, and bacteria are almost always indicated by their Linnaean name. This should be written in full the first time it is cited (e.g., *Escherichia coli*), and from the second citation onwards, the genus name can be abbreviated with a capital letter followed by a period (e.g., *E. coli*). The Linnaean name is italicised, with the genus capitalised and the species in lowercase. To indicate all species belonging to a genus, the genus name (in italics) is followed by *spp.* (e.g., *Mycoplasma spp.* = all species of the genus *Mycoplasma*). Some species or genera of microorganisms have their own common Italian name (e.g., toxoplasma, chlamydiae, mycoplasmas, salmonellae, leptospires) which should be written in lowercase and not italicised (e.g., pathogenic mycoplasmas, such as *Mycoplasma bovis*).

Why, When, and How References Are Cited in the Text

All scientific concepts or data presented in the thesis that are not common knowledge, or that are not the candidate's original discovery, should be supported with an indication of

when, where, and by whom they were first made available to the scientific community (**citation**). The Introduction is the part of the thesis where citing references is particularly important. This section is often referred to as the Literature Review, as it summarises the existing knowledge on the thesis topic, with due reference to the various authors who contributed to this body of knowledge. In the Materials and Methods section, references are provided for the methods used (whether modified or not). The Results section typically does not include references, while the Discussion section reintroduces them, as they provide essential support for the scientific comparison characteristic of this section.

Citing references not only honours those who originally expressed ideas or published data but also gives the reader the opportunity to consult the original sources to verify and expand their knowledge. References should be cited clearly in relation to a specific concept or piece of data, even in the middle of a sentence if necessary. The most convenient way to cite a reference is to include the author's surname (for two authors, both surnames; for more than two authors, the first surname followed by *et al.*) and the year of publication in parentheses. Do not hesitate to repeat a reference if necessary. There are sentences that require at least one reference (e.g., "Recent research has shown that…") or a suitable number of references (e.g., "Numerous studies report that…").

References may be of different types. They mainly include articles published in scientific journals, but also books or book chapters, conference communications, documents available online, and personal communications (see Tab. 4).

Among articles, **reviews** should be mentioned. These are articles compiled by authors recognised as authorities in each field, summarising the currently available knowledge on a specific topic in an organised and reasoned way. Reviews, by their very nature, are a valuable source of information. However, it is a mistake to cite a review for a concept or data it contains without checking and citing the original source. One strategy is to note (and cite) at the beginning of a topic that there are (few/many, old/recent/incomplete/comprehensive) reviews on the subject, from which many pieces of information have been drawn.

References may also be cited in the text using a simple number corresponding to a numbered list in the references section. This system is concise but does not aid memory of author names and is difficult to manage during the writing phase. A recommended system is to cite the author(s) and the year of publication according to the following scheme:

1. **Single-author work:** surname, year (e.g., King, 1981)
2. **Two-author work:** surname 1 and surname 2, year (e.g., King and Roberts, 1981)
3. **More than two authors:** surname 1 *et al.*, year (e.g., King *et al.*, 1981)

Tables

Tables are spaces outside the main text containing organised lists in rows and columns of numbers, names, symbols, or short phrases.

By definition, tables should be simple both graphically and conceptually. To achieve simplicity, they must provide a summary and sometimes a selection of data. When creating a good table, one should not hesitate to omit unnecessary information. If a table is too large,

it should be split into two smaller tables that are easier for the reader to use. A clear and simple table can also be helpful during the oral presentation of the thesis. Common mistakes when trying to fit too much data into a table include:

- Using a font smaller than 12 pt;
- Using numerous abbreviations;
- Using more than 8 columns.

A table is not merely a summary of data already presented in the text. The text may refer to some data in the table (the fewer repetitions of table data in the text, the better), but it must contextualise it. Therefore, every table must be cited at the appropriate point in the text and numbered sequentially. Tables are preferably inserted within the text or, exceptionally, placed at the end as an appendix when they are extensive (e.g., when reporting raw data). Each table should have a title above it (e.g., Table 1 – Summary of Histological Findings*)*. A balance in the number of tables is recommended: 5 tables are good, 10 are excellent, 20 are… too many.

Tables containing numerical values can be replaced by graphs; personal preference will guide the choice. Generally, numerical tables (more precise but less intuitive) are preferred in the written thesis, while graphs (less precise but quickly understood) are better suited for oral presentations.

Figures

Figures are spaces outside the main text in which images are reproduced (photographs, drawings, diagrams, graphs).

Figures often represent an especially important part of the thesis, as a well-prepared figure can convey much more than a long description in words. For a figure to be worthy of inclusion, it must be of high quality. Many people skim a thesis reading only a few sentences, but everyone looks at (and judges) the figures. Digital photography and colour printing with a standard printer now allow excellent results.

As with tables, each figure must be cited at the appropriate point in the text and numbered sequentially (separately from tables). Figures are preferably inserted within the text. Each figure should have a caption below it, describing in detail the relevant findings (the same information should not be repeated in the text).

Even with figures, moderation is important: 15 figures can be considered the maximum. If there is doubt about including a figure of questionable quality, it should be omitted. A poor-quality figure can negate the positive impression of the good ones and create… a bad impression.

Lists

Lists may be numbered or simply marked with a dot or dash. Numbered lists are used when there is a logical sequence (e.g., steps in a staining procedure) or to indicate a hierarchy of importance among items. All lists must be preceded by an introductory phrase ending with a colon.

Font, Line Spacing, Margins, and Page Numbering

The choice of font is a matter of personal taste, but clarity and legibility should take priority over aesthetics. A font size of 12 pt is recommended for the main text and should not be reduced, as sometimes occurs in figure captions or table texts.

Line spacing and margins are often "inflated" to make the thesis appear longer or more substantial. In reality, the quality of a thesis is not determined by its length.
Suggested formatting:

- **Margins:** 2.5 cm (top, bottom, right); 3.0 cm (left)
- **Line spacing:** 1.5 for the main text
- **Font:** Times New Roman, Arial, or similar; 12 pt for the main text, 10 pt for footnotes

The chosen font should be used consistently throughout, unless special circumstances require otherwise. Text and footnotes should be fully justified. Pages must always be numbered, even in preliminary drafts. Page numbers are especially essential during the proofreading of printed drafts. For more details: https://www.sba.unimi.it/aree-protette/files/strumenti/Word_per_la_tesi2021.pdf

Abbreviations and Acronyms

Abbreviations (shortened words followed by a full stop) and acronyms (formed from the initials of multiple words, in uppercase) are increasingly used. They should facilitate faster writing and reading of the thesis while saving space.

The first time an abbreviation or acronym is used, it must be preceded by its full expression (e.g., chronic interstitial nephritis (CIN)). Only a few abbreviations/acronyms are common enough in everyday or scientific writing to be used without explanation (e.g., DNA, USA, EU, etc., Dr., fig., tab., chap.). Some are specific to certain fields and require no explanation within that field (e.g., HE = haematoxylin and eosin, in pathology).

Excessive use of abbreviations/acronyms makes reading and comprehension more difficult. It is therefore important not to overuse them.

Quotation Marks

Within the text, either guillemets (« ») or double quotation marks (" ") may be used.

Note: It is possible to use guillemets or double quotation marks interchangeably; however, one system must be chosen and applied consistently throughout the thesis. Quotation marks are often used to indicate particular or mediated uses of an expression, e.g., when it should not be taken literally, such as "Wittgenstein's scale", "mobile phone", or "material" culture. This use should generally be avoided or applied sparingly, as it can cause confusion.

Additional Practical Advice

Other typographical rules concerning the writing of the text:

- Do not use a full stop at the end of the title on the cover page.
- Do not insert spaces:
    - Between a word and punctuation (space follows punctuation)
    - Between an apostrophe and the following word
    - Between a word and a footnote marker
- Avoid underlining and bold text in footnotes and citations.

4.8. Cover Page

The UniMi website (https://www.unimi.it/it/studiare/frequentare-un-corso-dilaurea/concludere-gli-studi/loghi-la-tesi) allows students to download the official logos of the Faculty of Veterinary Medicine and the University logo. A model cover page is provided in Annex 1.

4.9. Printing and Binding

Printing and binding of the thesis are at the discretion of the student.

5. THE THESIS DISCUSSION

5.1. The Presentation: Slides

The time allocated for the presentation is at the discretion of the committee and is around 12 minutes, which is not short if used properly. It is essential not to exceed the 12-minute limit, and ideally, the presentation should be slightly shorter to avoid rushing and to have a buffer for any minor issues. The thesis is presented using about a dozen slides prepared with one of the many available programs (PowerPoint, Canva, Google Slides, Prezi, Visme, LibreOffice, etc.). It is necessary to make the most of the time and slides available, dividing them among the various sections of the thesis while maintaining a certain balance, as shown in Table 6. Naturally, it is important to select the most interesting points to discuss without feeling the pressure to cover everything written in the thesis.

It is crucial that the presentation contains the essential information necessary for the audience to follow the "story" you want to tell.

Tab. 6 - General guidelines for time allocation (and number of slides) for the oral presentation.

Section	**Time**
Introduction and objectives	4 '
Materials and Methods	2 '
Results	3 '
Discussion	2 '
Conclusions, limitations, future developments, acknowledgments	1’
Total	**12**

An obvious consequence of the time and slide limits in Table 6 is that, on average, less than 60 seconds are available per slide during the presentation. With this in mind, you can start preparing the first slide.

Start, as usual, with the simplest section: Materials and Methods. This part may be very long in the written text, but it must be made "digestible" for the oral presentation with a significant reduction; those interested in detail can refer to the written document. Once the first slide is prepared, it should be reviewed by the supervisor, and the other slides should be prepared following the same graphical layout.

Here are some suggestions for creating effective slides:

- Everything written or illustrated must be simple and clear, neither trivial nor repetitive. The presentation should be clear not just to the presenter but also to the audience, especially the committee.
- Do not write the full speech on the slides; instead, use them as a guideline.
- Use concise sentences, lists, arrows, and simple diagrams.
- Avoid fonts that are too small (<14) or too large (>24).
- Use different font sizes and bold text to indicate hierarchy, but do not overdo it; avoid using too many different colours for the text.
- Avoid placing too many words (>50) or too few (<10) on each slide.
- Avoid inserting too many figures (>3) on the same slide. Do not use images that are too small.
- Avoid overly complicated tables, charts, diagrams, or histograms (they should be understood in about 30 seconds and clearly visible from 15 meters away) or those not discussed in detail during the presentation. Use a maximum of 10 tables/charts/diagrams/histograms in the entire presentation.
- Use a sober background. It is recommended to use the UniMi template available at the university's visual identity website: UniMi template.

The presentation must above all be clear. It can also be "visually appealing," but in ways that do not necessarily rely on the background.

- Avoid, or use sparingly, animations and special effects. Impress with substance (data and ideas), not with form.
- Use landscapes, animals, and humorous images very sparingly.

5.2. The Presentation: Speech

Now it is time to prepare the speech. Take a couple of slides and comment on them, paraphrasing the content. The easiest part to present is the introduction, so it is useful to start with this. At first, it may take more than 2 minutes to comment on a slide: simply remove pauses, "hum…", repetitions, and unnecessary phrases to reach the roughly 60 seconds available per slide. The result should be reviewed by the supervisor, and after taking their comments into account, the speech can be completed. Initially, it is helpful to write it down; with practice, it will be easy to memorize.

Here are some tips for structuring the speech. **Rhythm** is important: ideally, each slide should have equal time (~60 seconds), so avoid lingering too long on one slide at the expense of others. It is useful to capture the audience's attention. For example, when discussing the epidemiology of Helicobacter spp. infections, interest can be heightened by saying: "... based on currently available data, it can be assumed that in this room, 4 out of 10 people harbour Helicobacter pylori in their stomach. I will now illustrate the main diseases caused by this microorganism ...".

Voice is a fundamental aspect. Having a microphone does not replace the need for a good vocal tone. The tone should convey interest in what is being said, avoiding monotony. Emphasize important points with rhythm and volume (slow/loud for important points, slow/soft for difficult points, fast/soft for obvious points). Silence in the form of short pauses can also capture attention, for example, when projecting a particularly meaningful image.

Movements are also important. Do not gesticulate excessively, though occasional hand movements to highlight key points can be effective. Hands should never be in pockets. Avoid pacing, though small movements (e.g., turning toward the committee or audience) can help maintain attention.

Regarding **eye contact**, it is difficult to give universal advice. Obviously, look at the screen with the slides. Occasionally glance at the audience (especially the committee) if confident they are attentive, which is not always the case. The full attention of all committee members is crucial to make the candidate comfortable. Always look at the chair when introduced and at the committee members when answering questions. Never look at your shoes.

A laser pointer or mouse pointer can attract attention and should be used only for brief indications, especially in figures, tables, or charts, moving slowly around the point of interest and turned off immediately after.

Finally, the hardest part is overcoming **fear**. The first rule is simple: be thoroughly prepared. The most important thing is to practice repeatedly. In the early days, practice often in front of someone else. Close to the presentation date, a few general rehearsals per day with a small audience (colleagues, friends, relatives) are sufficient. Practice in the room where the thesis will be presented; it is essential to familiarize yourself with the environment and equipment. Test the pointer and microphone, paying attention to distance and sound quality. Find the ideal position for presenting. Check slides with the lights dimmed; some images (e.g., immunofluorescence) may project poorly if light and contrast are not properly adjusted. Memorize the first and last sentences perfectly, as they are the two most important: this helps overcome the first hurdle (starting) when your mind is not yet fully alert and the last hurdle (finishing) when the brain tends to shut down prematurely.

After the chair has introduced the thesis, focus on nearby people (including the supervisor, who can solve any problem if necessary), take a deep breath, and start the presentation.

5.3. The Discussion

Once the presentation is finished, it is customary for the reviewer, upon the invitation of the chair, to ask the graduate a question. It is important to allow the reviewer to finish the question, listening carefully, and to respond clearly and concisely. It is a good practice to take a few seconds after the question to reflect and formulate a thorough answer.

Other questions, potentially asked by other committee members, are sometimes perceived by the candidate as hostile—this is entirely wrong. Such questions often represent a sign of interest and appreciation. To best prepare for the discussion, it is useful to practice answering hypothetical questions, aiming not to be too brief or too verbose. Occasionally, a committee member may speak not to ask a question but to provide a clarification, comment, or

suggestion. In many of these cases, without engaging in unnecessary debate, it is sufficient to say: "Thank you for your clarification/comment/suggestion."

5.4. The Role of the Committee

Before the presentation and discussion, the committee preliminarily reviews each thesis based on the presentation by the supervisor, who outlines its nature (compilation/experimental), scientific relevance, and the candidate's personal contribution to the preparation and writing of the thesis. The reviewer provides the committee with their assessment of the written work.

Once the presentation and discussion are complete, the committee evaluates each candidate individually and determines the final graduation grade.

5.5. Graduation Grade

The final graduation grade is expressed out of 110 and is composed of the sum of **(1)** the weighted average of exam grades and **(2)** the grade assigned to the final thesis defence.

It is within the chair's discretion to propose honours (cum laude) for candidates with a total score of 110 or higher. The final grade is then approved by the committee.

Weighted Average (WA) of Exam Grades

The grade obtained in each course (including elective courses) is multiplied by the course credits (CFU). The sum of the weighted grades is divided by the total number of CFU of the exams contributing to the average. The result is expressed out of 110. In summary, the formula is:

$$WA = \frac{\Sigma \text{ (exam grade x No. CFU)}}{\Sigma \text{ CFU all exams}} \times (110/30)$$

In this calculation, a grade of 30 with honours is considered 30. The resulting WA is rounded down (0–4) or up (5–9).

Grade Assigned to the Final Defence

The grading of the final defence differs depending on whether the student enrolled before or after the academic year 2023-2024.

Students enrolled until the academic year 2022/23:

The committee generally differentiates between the score assignable to a compilation thesis and an experimental thesis: maximum 8 points for a compilation thesis and maximum 12 points for an experimental thesis. In assigning the grade, the committee considers the supervisor's evaluation of the candidate's personal contribution and effort, the reviewer's evaluation of the work, and the quality of the presentation and discussion. At its discretion, the committee may consider additional rewarding components from the student's academic record (e.g., graduating on time, participation in international programs, volunteer activities, etc.). The grading does not follow a rigid point system, unlike for students enrolled from the academic year 2023/24.

Students enrolled from the academic year 2023/24 (first graduates expected in the summer session of 2028):

The final defence grade results from the sum of points obtained following a scoring table that considers the committee's, supervisor's, and reviewer's evaluation of the thesis and presentation, as well as the student's academic record. Notably, the evaluation does not differentiate between maximum points for a compilation or experimental thesis.

The document outlining the rules for assigning final exam points, approved by the Veterinary Medicine Academic Board in September 2023, is provided in Appendix 2. For up-to-date reference, consult the "Graduating" page on the degree program website: https://veterinaria.cdl.unimi.it/it/studiare/laurearsi.

5.6. Conduct During the Discussion and After Graduation

The graduation ceremony is a solemn and important occasion, marking the achievement of a goal that required significant intellectual and material investment from students, their families, faculty, and the university.

In addition to arriving punctually at the scheduled time and location, students should inform administrative support staff of any requirements for projecting presentations or using illustrative materials.

Before and after the thesis presentation, students should behave as they would like their fellow graduates to behave during their own presentation. In practice, this means that during the few minutes of a thesis presentation, the candidate's legitimate priority is silence and attention. For public speaking, these are essential for comfort and optimal performance.

Thus, while others are presenting, the recommended behaviour is:

- If your presentation is upcoming, remain in the room in complete silence, not focusing on what others are saying but passively absorbing the atmosphere;

- After presenting, remain in the room in silence to follow colleagues who will be graduating in the same session;
- After graduation, gather friends and family and move them away (not merely into the hallway). The outdoor area in front of the bar is suitable if celebrating quietly. Post-ceremony celebrations must respect university spaces and staff. Inform friends and family in advance about expected behaviour.

The University of Milan has issued a "Graduate Charter," approved by the Academic Senate on June 23, 2015, with guidelines to ensure orderly conduct during graduation. The document is available at: https://www.unimi.it/it/studiare/frequentare-un-corso-di-laurea/laurearsi/il-giorno-dellalaurea. All graduates are required to sign it before the session. It highlights that:
"Excessive, ritualistic, or celebratory behaviours that could damage university facilities—such as fireworks, loud singing, posting materials on walls, or consuming alcohol with improper disposal—are prohibited."

The same webpage also links to the "Regulations for Photographer Access to University Premises during Final Exams for University Degrees." It is important to review this in case an unofficial photographer is recruited.

Annex 1: Cover Page

UNIVERSITÀ DEGLI STUDI DI MILANO

FACOLTÀ DI MEDICINA VETERINARIA

Master's Degree in ……

TITLE

Supervisor: …….

Co-Supervisor: …….

Thesis of:

.....

Matriculation No. .....

Academic year 20..-20..