

Writing and defending your thesis.

Ecology and Evolution division
Department of Biology and Behavior
University of Houston

The following information is meant as a guideline. In individual cases, in agreement with your advisor and/or committee, variations to these guidelines can be made. You should consult other sources for detailed points and recommendations on thesis presentation – there are many out there, use them.

Goal:

Why do you need to write a thesis? The simple answer is that it provides an established medium for you to demonstrate to your research committee that you have gained sufficient expertise in a subject area to be awarded a higher degree. Gaining a PhD is more than evidence you can *do* research, it is also evidence that you can communicate the results of that research to a wider audience. Introduction and Discussion sections of your thesis also provide you an opportunity to demonstrate that you have a good working knowledge of the field more generally – especially the place of your research area in it.

Setting a Defence Date.

The Biology and Biochemistry department has recently passed new guidelines requiring PhD students to receive permission to defend from their committee ([EE requirements](#)). This permission must be obtained by no later than the semester prior to the one in which you anticipate scheduling your defence. Permission does not require scheduling of a committee meeting, however, this is something that is encouraged. Permission to defend is not required of MS students.

Timeline.

Your advisor will give you specific guidelines, but in general you should aim to get a *best effort self-edited* copy of your thesis to your advisor at least 8 weeks before the date scheduled for your defence. With a two-week turnaround for you and your advisor, this should enable a corrected version to be ready 4 weeks before the defence date. Once you and your advisor are satisfied with the quality, you should give it to your committee members at least 2 weeks prior to your defence date. Giving a thesis to your advisor and committee members at the last minute may be seen as an effort to force their hand. If so, it will backfire.

Writing a thesis will almost always take longer than you imagine. Good advice is to write chapters as the associated work is done. An advantage of this approach is that writing chapters as research units will complement preparation of the same work in manuscript format. It will also reveal areas where additional experiments may be useful to support conclusions you would like to make.

General Format.

Check with the thesis office for specific formatting guidelines ([UH thesis preparation](#)). You may as well set things out right the first time.

Introduction and Discussion – what should they cover? The Introduction should provide a general overview of the research presented in your thesis – especially emphasizing the broader field and the place of your research in this field. The Discussion should not re-present your results, it should present an interpretation of them and put them in the context of existing knowledge. Both these sections should be written with non-experts in mind.

The appropriate length and breadth of Introduction and Discussion chapters will depend on the presentation of your Results chapters. If you include separate introductions and discussions in your Results chapters (e.g. as in a manuscript format), your general Introduction and Discussion chapters need not be more than 3-5 pages in length. Note: do not read this to say that a general Introduction and Discussion are of secondary importance. Your committee will want to be convinced that you have a good sense of the place of your research in the broader field of which it is part.

Results. We encourage doctoral candidates to present Results chapters in a manuscript format. That is, having separate Introduction, Materials and Methods, Results, and Discussion sections. (Note: if the thesis does consist of closely related papers, you may consider editing Results chapters relative to standalone manuscripts in order to reduce redundancy. This may be especially relevant to Materials and Methods sections, but also the individual Introduction and Discussion sections.) The aim of this format is to facilitate the translation of thesis chapters to publishable manuscripts.

An increasingly common issue is that some work you might want to include in your thesis will be collaborative – that is, involve contributions of several researchers (in addition to the advisor). In this case, it is important that your contribution to the work is clear to those evaluating your thesis. The best way to do this is likely to depend on particular circumstances and should be discussed with your committee. A good starting point is to include a short description of your specific contribution at the start of any collaborative chapter. Similarly, if a chapter of your thesis has already been published, you should note this fact and provide a reference. It is not necessary to rewrite a manuscript you want to include in your thesis if you were responsible for the original writing. You should, however, rewrite work based on manuscripts written with substantial input from collaborators. The guiding philosophy here is that the thesis should be, as far as possible, your own work. Details of any exceptions should be made clear to readers. Finally, it is a good idea to keep your committee up to date with your intentions on including collaborative work in your thesis.

Masters theses will usually be organized as a single manuscript, separating Introduction, Materials and Methods, Results and Discussion sections into separate chapters.

Uniformity.

How similar do chapters have to be – should they tell a single story, or is it OK to be only loosely related? The answer to this question will depend on many factors. Your committee will be able to give specific guidance. It is therefore important to keep them up to date with how you intend to present your thesis.

Presentation quality.

A thesis tests your ability to present and communicate your research. As such, it should be of a quality that can realistically be submitted to a peer-reviewed journal. Figures should be carefully thought out and presented in an intelligible way. Text should be carefully edited for clarity. Be precise and concise.

Don't underestimate how hard it is to write in a manner suitable for scientific publication. Take every opportunity you have to practice your writing. Rigorously self-edit your own work before asking friends or colleagues to review it. Buy a good style guide and writing book. They will help.

Length.

A thesis should be as long as it needs to be, but not longer. It is obvious when a thesis is padded, and it will not endear you to anyone who has to read it. A PhD should have at least 3 results chapters (a MS thesis should have 1) and an Introduction and Discussion. The Introduction and Discussion should not be afterthoughts! If your thesis is arranged as a series of papers, each with their own Introduction and Discussion, then they can be short, providing an overview of your research area and putting your results in this context.

Publication.

Getting any job, let alone an academic one, will be easier if you can demonstrate that the research you completed during your graduate career was of high quality. The most convincing way to do this is to be able to point to a publication in a respected peer-reviewed journal. **For this reason the Ecology and Evolution division requires that all PhD candidates have a peer-reviewed research manuscript published or in press prior to defending their thesis.** At the same time, we recognize that complications can arise. At the discretion of your committee, 'submitted' or 'in preparation' manuscripts may be accepted as sufficient for a defence date to be agreed.

Defence.

When you schedule your defence date you should begin thinking about logistics. See Rhonda for help with booking a conference room.

An oral presentation is a required component of your defence. There are at least three reasons for this. It is useful in allowing your committee to assess your understanding of your thesis work. It provides the department at large the opportunity to hear what you have done (before you go). It gives you an important opportunity to practice a 'long-format' presentation. (You should have presented your work at conferences before now, but these are likely to have been ~15 minute talks. Many of the jobs you will be applying to will require you to present something longer.) With these aims in mind, remember that many in attendance will not be expert in your field. Your talk should be accessible to these people too. You should aim to cover your entire thesis work. If you did many projects, this might be hard. Part of the challenge is to be able to link your work into one presentation package of 40-50 minutes.

The oral exam will probably center on your thesis work. However, it is not limited to this. You are expected to be able to convey a good working knowledge of the general field of Ecology and Evolution as well as expertise in the specific area of your thesis.