

Successfully Completing A PhD

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This is what University of Wollongong says about writing a PhD :

“Candidates should not underestimate the time and care required in writing the thesis. The quality of the research undertaken can only be assessed by examiners on the basis of the information and analysis presented in the thesis. The process of writing a thesis is an iterative one involving the candidate and supervisor and usually takes longer than anticipated.”

<http://www.uow.edu.au/research/thesis/guidelines.html#Writing of the Thesis>

This is what I say about writing a PhD :

Some of what I am saying here is just common sense. Some of it is learnt after making (and continuing to make the same) mistakes. It is based on my own experiences and should be used as a guide only.

This guide is written from my experience in researching methodologies relating to statistics, NOT mathematics. I apologise to those mathematicians who feel that this may not be applicable to them – it is.

Before you start writing your thesis :

- 1) Know what you are going to write about.
- 2) Everything that you know in your area started somewhere. Make a list of all the important contributors in the area and when, where and what contribution they made. Know most of this work. It is the foundation of your thesis. David (1995) gives a good list of the origins of common statistical terms. However NOT ALL terms are included, eg correspondence analysis (my PhD research topic)
- 3) Extend 2) and make a list of ALL the papers/books that you have looked at so far. Even if you don't include them all in your thesis, you at least know what you have later on.

Preparing your thesis :

- 1) Write yourself a preliminary contents page with proposed sections. You will include and omit various sections. So don't think you need to keep to your original plan. It helps to plan what you want to discuss in each chapter.
- 2) A thesis is a (technical) book. Every book has a contents page, introduction, chapters that define each topic, sometimes an appendix, and a list of references. Make draft copies of each of these.
- 3) Plan out what you want to write about in each chapter. Each chapter should discuss one large topic. Sections within each chapter then refine the content.
- 4) If you have publications each paper could make up a chapter. The advantage of this is that you can cut and paste the content with some revision.
- 5) Murphy (1997) gives a good guide for students in reading statistical literature.

Writing your thesis :

- 1) Plan how long you want to take to write your thesis. The general time frame is four to six months. Plan on making it six months. It goes VERY quickly.
- 2) Start with a preliminary introduction, defining what you intend on writing about and the benefit of your work to the statistical community.
- 3) Each chapter should also start off with an introduction. This is where you start to be more specific about what you want to say.
- 4) Make sure that your notation is consistent throughout the whole thesis.
- 5) Some papers in some of the popular journals include horrible and unnecessarily complicated notation. Try not to do the same thing. It makes the thesis hard to read.
- 6) Include in your thesis a list of programs you wrote. This serves two purposes. Firstly it helps the examiner know how you made the calculations. It also serves as a source of reference if you need them in the future.
- 7) The worst part of writing your thesis is the editing. You can thoroughly go through a chapter, find no mistakes, then read through it again the next day and find heaps. It's frustrating. It happens. If you use Microsoft Word as your text editor, this problem will arise. Using packages which create LaTeX documents, such as WinEdt (with MikTeX) will do automatic formula, figure, table and page referencing. You can download WinEdt free from <http://www.winedt.com>. MikTeX can be downloaded free from <http://www.miktex.org>
- 8) Lots of editing is in the notation and equations will be required. They are sometimes small and not so obvious.
- 9) Make sure you have no spelling mistakes. Use spell check each time you finished editing your work.
- 10) Make sure there are no grammatical errors. The only way to get rid of those is to read through it carefully. Get someone else to read it for a fresh view.

The Internet :

- 1) The internet is a great source of information when you know where to look.
- 2) A good source of papers is from the website of authors who are actively involved in the development of your area of interest. Try and find them. The advantage of these sites is that there will often be copies of papers that the author is working on, or who has recently completed and not yet published.
- 3) Nowadays, many of the more recent issues of journals are available for direct download from the internet. The Wollongong University Library has a LibrarySearch site where you can search for journals which allow direct download of articles. For example <http://www.navigator.blackwell.co.uk> from the university's site (you must have a wumpus account to access this site) and the journal of interest depends on whether the library is subscribed to that journal
- 4) Using JournalSearch on the library website, journals which provide full text of statistical articles include :
 - Journal of the American Statistical Association
 - The American Statistician
 - Journal of the Royal Statistical Society, Series A and B
 - Journal of Applied Statistics
 - Biometrika
 - Statistica Neerlandica
 - The Statistician
 - Biometrical Journal

(Sorry to the maths people. I will try and make a list in the future of maths journals where full texts of articles can be obtained)
- 5) Also check out the Library's *Databases* (on the library's main webpage) website. It gives you a list of sites where you can obtain abstracts or full texts of journal articles by faculty.

Other Advise :

- 1) A thesis is a technical document discussing in detail what contribution you have made in your area. Enjoy writing it.
- 2) Positive selling is important. That's why the workers at the counter at McDonalds ask if you would like fries or dessert with your order. When you write your thesis be positive on the advantages of your work. However, don't go overboard.
- 3) Listen to your supervisor. They have done a PhD before.
- 4) If you have a good area of research, the PhD should not exhaust all possibilities of further work.
- 5) Due to time constraints, (approx 3 yrs) it is not always possible to include EVERYTHING you set out to do during your preparation.

Non academic factors :

- 1) To get the work done you need a source of motivation. Think Why am I doing this?? (the positive one)
- 2) The thesis is what you are working to complete. But there is more to life than your thesis. Do what helps you relax and have fun.

Things you MUST do :

The uni require some things that need to be done before final submission of your thesis.

- 1) You need to include a title page that contains only the name of the thesis, your name, where you wrote it, and the degree for which it is submitted.
- 2) A declaration : stating that the work in your thesis is your own original work, except where due references are made.
- 3) An abstract : between 1-2 pages. This is a very general overview of your thesis. No notation, just what you want to say and what contribution it makes.

- 4) The thesis can be submitted on either single sided A4 or double sided A4 paper. It must be double spaced and 12 size font. The font style doesn't matter.
- 5) The margins on each sheet must be not less than 40 mm on the bound side, 20 mm on the unbound side, 30 mm at the top and 20 at the bottom;
- 6) Before final submission of your thesis, it needs to go to two independent reviewers. These people are outside of the university. First submission can be handed in spiral bound. It doesn't need to be a hard bound copy.
- 7) The final submission of your thesis only goes to the university. It must be a hard bound copy. You need to submit two copies to the postgraduate office. They can be bound locally by (only Illawarra binder)

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Telephone 0419 280 713 (7 doors north of Oasis Caravan Park)

- 8) See the following uni webpage for more info of what you need to do before submitting your thesis <http://www.uow.edu.au/research/thesis/guidelines.html>

References

David, H., 1995 : First (?) occurrence of common terms in mathematical statistics, *The American Statistician*, **49**, 121-133.

Murphy, J., 1997 : How to read statistical methods literature : a guide for students, *The American Statistician*, **51**, 155-157.