

Writing your Ph.D. thesis

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Postgraduate Away Day
University of Bath
13th January 2011

- 1 The purpose of a thesis
- 2 University regulations
- 3 Content and structure
- 4 Presentation and writing process
- 5 Make your life easier - some helpful L^AT_EX
- 6 The defense
- 7 Summary

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A Ph.D. shall be awarded to a candidate who shall have

- 1 pursued a **programme of study** as prescribed under Regulation 16.5(b)
- 2 presented a **thesis** on the candidate's advanced study and research which satisfies the Board of Examiners as:
 - making an original and significant contribution to knowledge
 - giving evidence of originality of mind and critical judgement in a particular subject
 - **containing material worthy of peer-reviewed publication**
 - being satisfactory in its literary and/or technical presentation and structure with a full bibliography and references
 - demonstrating an understanding of the context of the research: this must include, as appropriate for the subject of the thesis, the scientific, engineering, commercial and social contexts
- 3 and passed a **viva voce** examination conducted by the examiners on the broader aspects of the field of research in addition to the subject of the thesis...

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■ For details see

<http://www.bath.ac.uk/student-records/pgresources/docs.html>

This website also includes the HD1 and HD2 forms.

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- Number of copies and submission procedure:

- about two months before submission - HD1 form.
- 3 soft bound copies to Wessex House 2.12c - HD2 form.
- hard bound copies and electronic submission to library only after the viva.

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- Paper and layout - double or single sided.
- Typeface and spacing - 11pt or 12pt, easy readable font.
- Numbering of pages.
- Title page and copyright declaration.
- Table of contents and abstract/summary.

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WRITING YOUR THESIS OUTLINE

NOTHING SAYS "I'M ALMOST DONE" TO YOUR ADVISOR/
SPOUSE/PARENTS LIKE PRETENDING YOU HAVE A PLAN

STEP 1 Aim for a respectable number of chapters:

THESIS OUTLINE

- 1.
- 2.
- 3.
- 4.
5. ↖ chapter #’s
- 6.
- 7.

5 = "That's IT?"
6-7 = "Not bad"
8+ = "Are you crazy??"

STEP 2 Fill in the "freebies":

THESIS OUTLINE

1. INTRODUCTION
2. LIT REVIEW
3. METHODOLOGY
- 4.
- 5.
- 6.
7. CONCLUSIONS

You're half way done!

STEP 3 Make up titles for the "meat" chapters:

6. LIT REVIEW
3. METHODOLOGY
4. (THAT STUFF YOU DID YOUR FIRST YEAR)
5. (STUFF YOU'RE SUPPOSED TO BE DOING NOW)
6. (MAKE STUFF UP)
7. CONCLUSIONS

(It'll be years before you actually have to work on that later chapter, and by then your thesis topic will have changed anyway)

STEP 4 Voilà! You just bought yourself another two years



So, how's your thesis going?

i have an outlined

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www.phdcomics.com

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■ Self-contained.

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- Self-contained.
- May include more than one topic.

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- Self-contained.
- May include more than one topic.
- It is like a book. **It should tell a story.**

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- Self-contained.
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- **Organisation and structure is important.**

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- Self-contained.
- May include more than one topic.
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- **Organisation and structure is important.**
- Most important are its readers (your supervisor(s), internal and external examiner). **Who are you writing for?**

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- Most important are its readers (your supervisor(s), internal and external examiner). **Who are you writing for?**
- Include more details than a paper.
- No unnecessary material. Most theses are too long.

- If you copy text put it in quotation marks and cite the source.
- Do not copy proofs of theorems unless it is really necessary for the thesis.
- Your examiners will be particularly alert to plagiarism.

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- Use spell checkers!
- Ask a friend/fellow student or family member to read through parts of your thesis.

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Clear communication of original ideas is most important!

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Do not waffle!

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- **Tell a story** (Explain to someone (a mathematician) in 2-3 minutes what your thesis is about).

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- Conclusions: What have you done? Identify future research directions/open problems.

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- **Introduction** Define what your research is about; justify why it is important; explain your thesis structure.

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- **Introduction** Define what your research is about; justify why it is important; explain your thesis structure.
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- **Conclusions** Short conclusion. Future research.

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Make your thesis clear and enjoyable to read!
Do not waffle!
You do not want the reader to get angry or bored.

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- Follow the University regulations for margin sizes/line spacing/fonts/binding etc.

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- Typical:
 - 1 **Title page (listing author, title, department, type of degree, year and month of submission).**
 - 2 Declaration that work has not been used in another degree.
 - 3 **A copyright statement.**
 - 4 A list of notation.
 - 5 A brief statement of author's research career.
 - 6 Acknowledgments and dedications.
 - 7 **Table of contents.**
 - 8 List of Figures.
 - 9 List of Tables.
 - 10 **Abstract/Summary.**

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- Opening pages: indication which parts have been published.
- Optional: index.

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■ Start as early as possible.

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- **Start as early as possible.**
- You can begin to draft the first chapters in your early months, when you start to become familiar with the problem - writing also helps to understand!
- Publish papers during your time as a graduate student - so you just have to edit them and put them together.

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- A sooner rather than later writing also helps you to become familiar with \LaTeX .

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- If you have not written up as you go along - plan at least 6 months for writing up.

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- If you have not written up as you go along - plan at least 6 months for writing up.
- **Make a timetable.**

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- If you have not written up as you go along - plan at least 6 months for writing up.
- **Make a timetable.**
- What have you done? What do you still need to do?

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- What have you done? What do you still need to do?
- Fill in the gaps.

- If you have not written up as you go along - plan at least 6 months for writing up.
- **Make a timetable.**
- What have you done? What do you still need to do?
- Fill in the gaps.
- Thoroughly read and check before submission - have as many people read it as possible.

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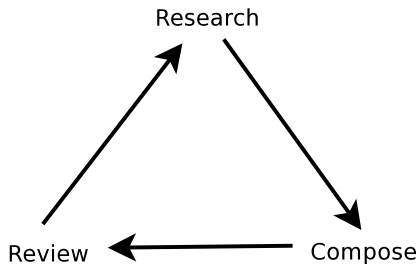
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- Try to analyse the work of writers/researchers you like.

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- Try to analyse the work of writers/researchers you like.
- Keep a notebook of ideas.

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- Try to analyse the work of writers/researchers you like.
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- Be constructively critical (but positive) of your own work.
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- Keep what you have written for a couple of weeks and then re-read it.

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■ \LaTeX and text editors

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- `baththesis.sty`

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- A useful template for writing a thesis which follows the University of Bath regulations:

<http://www.maths.bath.ac.uk/~mamamf/baththesis>

- A useful template for writing a thesis which follows the University of Bath regulations:
<http://www.maths.bath.ac.uk/~mamamf/baththesis>
- Feel free to download the template and change it to use it for your own thesis. It follows all the necessary University of Bath requirements.

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- collect your references for your bibliography at an early stage of your studies - it will be difficult to hunt them down later.

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- collect your references for your bibliography at an early stage of your studies - it will be difficult to hunt them down later.
- BIB \TeX - a wonderful \LaTeX program for collecting references in .bib files which then can be used in \LaTeX .

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- collect your references for your bibliography at an early stage of your studies - it will be difficult to hunt them down later.
- BIBTEX - a wonderful L^AT_EX program for collecting references in .bib files which then can be used in L^AT_EX.
- MathSciNet, Google Scholar, CiteSeer, Mendeley (ask Phil) and others.

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- In the UK: normally you are asked questions.
- Possibly: short talk.
- **Read your thesis.**
- Opportunity to tell interested people about your research.

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- Your thesis should tell a story.
- Start as early as possible.
- Use `baththesis.sty` early on.
- Have a general structure (Chapter titles) in place early on.
- Make a timetable (set short term targets).
- (Re)-read your thesis as often as you can.
- Be positive.

Know your work cycle!

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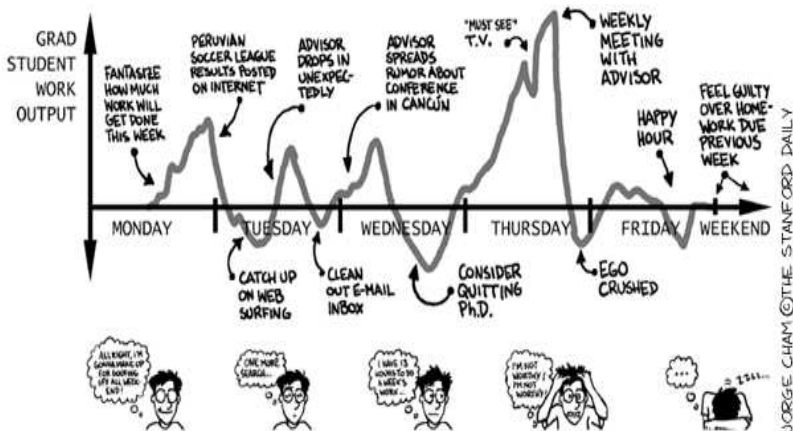
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N. J. HIGHAM, *Handbook of writing for the mathematical sciences*, Society for Industrial Mathematics, 1998.

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