

# Thesis/Presentation/Poster Briefing

Guidelines and advice on your project work

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# Slides Outline

Disclaimer

Deadlines

Assessment Components

Thesis Guidelines

- General information

- Organisation

- AI

- References

- Writing style

- Plagiarism

- Summary

Presentation Guidelines

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# Disclaimer

Nothing in these slides is absolute (even this statement, see below), writing is an art form, and sometimes breaking the “rules” is the best thing to do. When in doubt, ask your supervisor (or me right now).

*“Rules are for the guidance of wise men and the obedience of fools.”*

Sir Douglas Robert Stuart Bader, Brickhill 1954, p. 44.

*“Tis impossible to be sure of any thing but Death and Taxes”...*

Christopher Bullock, The Cobbler of Preston 1716.

*“...and going over the page limit, we're pretty clear on that one”*

Marcus Bannerman, lecture slides, now.

Only cite sources that have been published in a fixed form AND peer reviewed. None of these citations above meet that requirement but I'm still going to use them as its entertaining AND it drives home a point I'm trying to make. Try to be entertaining, creative, and have a point to everything you write.

There is a massive document called “MEng & BEng Project Guidelines” on MyAb-erdeen that has lots of detailed advice. If in doubt, that is the authority. I will only highlight key parts.

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# Deadlines

**Always check the project handbook on MyAberdeen, it is always updated!**

Date	Description
Friday, 15 <sup>th</sup> March	Deadline for a single draft chapter (10 pages max) for feedback. Make it the hardest chapter to write, and make sure there are no easy mistakes to maximise value.
Friday, 29 <sup>th</sup> March	End of supervision/lab work/teaching.
Monday, 29 <sup>th</sup> April, <b>Midday</b>	Submission of electronic copy of thesis ( <b>twice</b> ), and abstract, to MyAberdeen at 9am.
Tuesday, 30 <sup>th</sup> April	Presentation submission definitely.
Tuesday, 30 <sup>th</sup> April	Presentation, probably.

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# Assessment components

Component	EG4014 BEng	EG4013 MEng
Winter Report	0%	0%
Thesis	65%	65%
Presentation	20%	20%
Supervisor assessment	15%	15%

**Table:** Percentage weighting of marks for each component of the Engineering project.

*“Know your enemy”*

Rage Against The Machine  
Is this the best citation for this quote?

- ▶ All assessment marking sheets are available on MyAberdeen.
- ▶ Know the distribution of marks. Make sure all bases are covered - Don't miss the "easy" marks.
- ▶ Your supervisor does not mark your thesis. Your target audience is your colleagues in your class.
  - ▶ So make it interesting! Try to make it so your classmates would want to read the thesis/see the presentation.
  - ▶ Help them understand your work, in doing so you will provide the evidence needed to show YOU understand your work.
  - ▶ Avoid being boring (repetition, "filler" text/paragraphs, listing). As a marker, I have to read 10-20 of these a year depending on class size, so 500-1000 pages. Every time I see a "thinner" thesis I start marking happy.
  - ▶ You are not assessed on the amount you write/present, but the quality! Best thesis I have ever read was 35 pages long. Einstein's papers were 10 pages long. Nature (arguably the "best" journal) only allows 5 pages max. The shortest English story written is six words long, has a beginning/intro, a middle/main-body, and end/conclusion. Its a sad perhaps triggering story, so only look it up if that's what you want.

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Presentation Guidelines

- ▶ Start writing early!
  - ▶ You will forget ideas, analysis, key points of papers quickly, get them down on paper now!
  - ▶ Writing **drives** the research, not the other way around. You want to do something, why? Who did it before? Why is your way better? Do you get the same results? Are your results better? Did you learn something new?
- ▶ **Start** with this structure:
  - ▶ Title page (1pg 1/50)
  - ▶ Abstract (1pg 2/50)
  - ▶ Table of contents (1pg 3/50)
  - ▶ List of tables and figures (1pg 4/50)
  - ▶ Nomenclature (1pg 5/50)
  - ▶ Introduction (2pgs 7/50)
  - ▶ Aims & objectives (1pg 8/50)
  - ▶ Literature review (10pgs 18/50)
  - ▶ Main body (10pgs 28/50)
  - ▶ Results and discussion (10pgs 38/50)
  - ▶ Conclusion (3pgs 41/50)
  - ▶ Recommendations (1pg 42/50)
  - ▶ References (2pgs 44/50)
  - ▶ Appendices (5pgs 49/50)
- ▶ But when did you read (voluntarily) a book like this?

# Thesis Organisation

- ▶ Organise the thesis how you think is best, start with the previous outline.
- ▶ Perhaps it would be better to have it organised into topics, e.g.: An introduction to nanofluids→ Experimental evidence for anomalous thermal conduction effects→ Modelling thermophoresis in thermal conduction→ Simulations of thermophoresis→Finding the optimal conditions for enhancement/dehancement→Conclusions.
- ▶ Repetition is a sign that the order of topics may be wrong! (Or you really mean a point, like page limits!)
- ▶ Each **chapter** should begin with an introduction to the chapter, stating how this chapter fits with what has gone before. Each chapter should also end with conclusions, and how it fits into what comes after.
- ▶ This is even true for paragraphs!
- ▶ Think about how **you** read the web. Do you start at the beginning or do you jump to a section and start reading from there? You should always remind the reader why they are reading this content, and what it means in the broader scope of the paragraph/section/chapter/thesis. Ever read a story and forgotten who/what is going on?

+ New chat

Write Engineering Thesis  

Write Thesis How-To



How should I write a Engineering thesis?



To write an engineering thesis, you should follow these steps:



1. Choose a relevant and feasible research topic: Identify an area of engineering that interests you and conduct a literature review to determine the current state of knowledge and identify gaps that your research can fill.
2. Develop a research plan: Define the research objectives, hypothesis, methodology, and timeline for your study.
3. Conduct the research: Collect data, perform experiments, analyze the results, and draw conclusions based on your findings.
4. Write the thesis: Start with an introduction that provides background information and sets the stage for your research. The main body should present the results of your study and provide a critical evaluation of your findings. The conclusion should summarize your results, discuss their implications, and provide recommendations for future research.
5. Revise and polish: Read your thesis several times, paying attention to clarity, consistency, and grammar. Get feedback from your advisor and peers, and make revisions as necessary.

Remember to follow the guidelines and format specified by your academic institution and to properly cite any sources you use in your research. Good luck!

# AI tools like ChatGPT

- ▶ I welcome our new robot overlords, just as I've welcomed mechanisation of nearly everything. ChatGPT is just spell-check on steroids. It will help but the meaning/outcome might be completely difference to what you intended.
- ▶ When everyone can write 50+ pages of bland, circular, derivative text, what would you find valuable?
- ▶ If someone forced you to read 50 pages of chatGPT, how would you feel?
- ▶ Conversely, when someone clearly has original ideas, how do you feel?
- ▶ ChatGPT has been around since November 2022, why aren't movies/TV shows/books/websites suddenly better? Why are there so many more bad articles online?

# Thesis marking scheme

Component	EG4014 BEng	EG4013 MEng
Presentation & style	30%	20%
Technical content & merit	70%	50%
Evidence of critical reasoning	-	30%

**Table:** Categories and allocation of marks for the thesis.



- ▶ Do not underestimate the importance of presentation (20-30%)! You cannot display evidence of critical reasoning (30% MEng only) or communicate the technical content (50–70%) without it.
- ▶ The key to presentation is

# CONSISTENCY.

- ▶ **No** sudden font changes, margin shifts etc. (like above).
- ▶ consistent capitalisation (not like this line). Double check your table of contents, Camel Caps Always Looks Bad!
- ▶ **No** spelling mistakes!
- ▶ Your spell checker will not notice poor grammar or correct but poorly chosen words (even grammerly). A way to test of grammar is to try reading the document aloud, you'll engage the other half of your brain to process it.
- ▶ You will conquer these common errors by giving yourself plenty of time to proof read your document. Write now, proof read from now to submission!
- ▶ Figures are always a common area for problems. . .

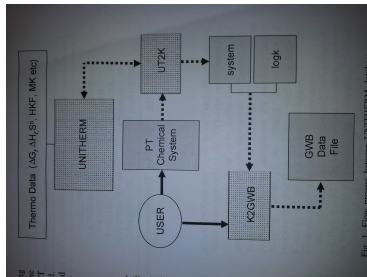
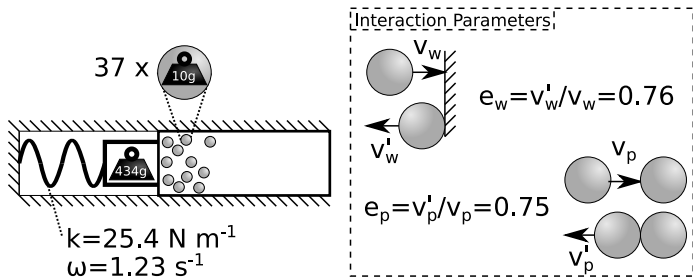


Figure: A flow chart[1].

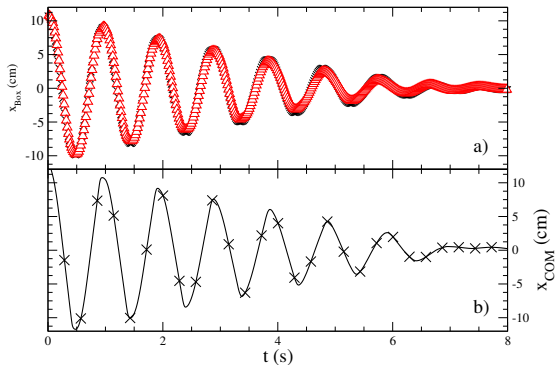
The “rules” of figures:

- ▶ **Don't** use poor quality scans/**pictures** of documents (learn to draw on computer! Use powerpoint, illustrator, inkscape).
- ▶ Simple diagrams should **always** be redrawn by yourself because you can make them better. Your diagram should be concise and only include relevant information, so make sure it does.
- ▶ **Don't** skip on captions like above, go beyond just references.
- ▶ If you include a figure it must be discussed in the text somewhere.
- ▶ They should be wider than they are tall (to avoid wasting space).



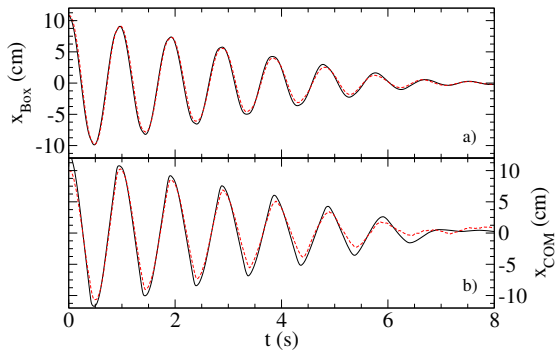
**Figure:** An illustration of the simulation model (left) and particle interaction parameters (right) used to represent a granular damper. The particles are free to move in all three directions, but the damper box is constrained to a one-dimensional oscillation.

- ▶ The figure above is a good example of a technical drawing, produced using Inkscape (a free package).
- ▶ It is discussed in the text of this slide, **has a descriptive caption**, uses a **white background**, and is clear.
- ▶ As I drew the figure, I don't have to cite anyone to use it. I can also make it as detailed/descriptive as I need. There is no "left-over" or redundant information in the diagram.



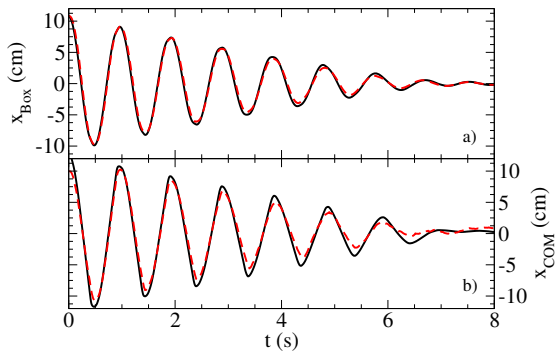
**Figure:** A comparison of simulation predictions of damper performance versus experimental results[2].

- ▶ Please make sure that the **text in the figure is the same size as the text in your document** (unlike the tick labels above).
- ▶ If you have lots of data like this you may plot a curve through it. If you have less, then plot data points (no curve) so we can see where your data is.
- ▶ **Never blindly fit a trendline!** Fitting a curve implies you know the functional form.



**Figure:** A comparison of simulation predictions of damper performance versus experimental results[2].

- ▶ The text is at a better size now, but the lines are too small.
- ▶ If you try to print this, they might not appear at all.
- ▶ We're also missing additional information on the plot.
  - ▶ What are the conditions it was run at?
  - ▶ What is the difference between a) and b)?



**Figure:** A comparison of simulation predictions for the a) damper box and b) damper mass position against experimental results[2]. This data was obtained from a  $L = 40$  mm damper, with an initial amplitude of  $\Delta = 130$  mm.

- ▶ Hopefully you'll agree that this is a better plot, it also makes it much easier to understand the technical content.
- ▶ Note, captions can be long! You must use a short caption in the table of figures, but not in the main text.

# Referencing guidelines

- ▶ Cite references to support a statement, **don't just cite at the end of a paragraph**. Examples of good referencing style is:
  - ▶ There has been significant research into granular dampers in the past [2]. Research continues into this field...
  - ▶ Bannerman et al[2] has studied granular dampers using simulation and experiment.
  - ▶ Data on granular damper performance is available in Ref. [2].
- ▶ References are your evidence, they must be solid if you want to build a convincing case.
- ▶ Don't cite websites! They change over time, so their evidence is inadmissible (one of many exceptions are equipment data sheets).
- ▶ Only cite peer reviewed sources (books, papers, journals), as these have validated/reviewed scientific results within them.
- ▶ Make sure your reference section is consistent (page numbers on all journal papers, abbreviated journal titles, **consistent** capitalisation).

# Example Bibliography I

[https://images.webofknowledge.com/images/help/WOS/A\\_abrvjt.html](https://images.webofknowledge.com/images/help/WOS/A_abrvjt.html)

- [1] B. J. Alder and T. E. Wainwright. “Studies in molecular dynamics. 1. General method”. In: *J. Chem. Phys.* 31.2 (1959), pp. 459–466. DOI: 10.1063/1.1730376.
- [2] M. N. Bannerman et al. “Movers and shakers: Granular damping in microgravity”. In: *Phys. Rev. E* 84 (2011), p. 011301. DOI: 10.1103/PhysRevE.84.011301.
- [3] M. N. Bannerman and L. Lue. “Exact event-rate formulae for square-well and square-shoulder systems”. In: *J. Chem. Phys.* 133 (2010), p. 124506. DOI: 10.1063/1.3486567.
- [4] S. Chapman and T. G. Cowling. *The Mathematical Theory of Non-uniform Gases*. 3rd. Cambridge Mathematical Library, 1991.
- [5] J. M. Haile. *Molecular Dynamics Simulation - Elementary Methods*. New York: Wiley-Interscience, 1997.



# Writing style

- ▶ Use impersonal present tense and make sure each sentence is a justified statement:
  - × I chose to use an experimental approach as I felt it was justified given that simulation is too difficult.
  - ✓ Experiments are required as current models cannot capture the complexity of these systems.
  - × The experiments were conducted over the second half session and a techtron 9000 was used to take measurements.
  - ✓ A techtron 9000 is used to determine arsenic levels in each sample.
- ▶ This forces you to keep opinion or inconsequential information out of the text. You need to be concise!

# Plagiarism

- ▶ Plagiarism is **misrepresenting someone else's work as your own**.
- ▶ Consequences are dramatic. Plagiarism can lead to failing grades, and if you fail your project you cannot graduate on an honours program (BEng/MEng).
- ▶ Citations should be used to state the source of specific facts, tables or figures. They do not “allow” you to copy sentences or paragraphs from a text.
- ▶ **DO NOT COPY/PASTE TEXT, EVER.** You should only write what you understand, and if you understand it, there is no need to copy.
- ▶ Even if you somehow manage to sufficiently reference a copied/quoted work and make it clear that you did not do it, it will be identified and marked with the knowledge that you didn't write it (i.e., you will gain little or no benefit to its presence).
- ▶ All assessments are you presenting evidence of the work you have done. Not someone else's.

# Thesis Summary

- ▶ The page limit a maximum of 50 pages (+10 pages of appendix we ignore).
- ▶ I cheer every time a thesis is less. We're looking to changing it to a 30 page paper.
- ▶ Do not try to make your thesis seem larger or smaller through poor figure placement, font size changes, tiny margins etc. You will lose the “easy” presentation marks AND annoy your marker.
- ▶ **You will not lose marks for having too few pages**, but you will for poor formatting, or exceeding the page count, or not communicating enough content/depth, or for being boring/irrelevant.
- ▶ Your thesis is not marked by your supervisor but by two other academics, so ensure you introduce all basic concepts and your background information is clear and sufficient.
- ▶ **Know the guidelines!**
- ▶ Research academic writing!  
(search on-line for “How to write a paper” by Prof. Mike Ashby)

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# Presentation Guidelines (MEng)

- ▶ When you give the presentation, enjoy it! This is work that you should know well, have spent a long time on, and which you are proud of.
- ▶ **You** are the presentation, the slides are there as an aid to reinforce the points you make.
- ▶ This set of slides has far too much text, it is a set of notes, your presentation is not!
- ▶ Don't read from the slides or from cards! It looks like you don't know what you're talking about and stops you actually talking to your audience.
- ▶ One minute per slide is a good rule of thumb (10 min + 5 min for questions).
- ▶ Explain every figure on the slide, the axis, the symbols etc., most of the audience will have never seen your graphs before.
- ▶ Talk loudly and clearly.
- ▶ Do not overrun your time! You will be cut off and penalised for this.
- ▶ Your presentation is typically **not assessed by your supervisor**, making sure you explain the background/motivation and basic ideas is essential!