Session 6 – Thesis structure

Thesis structure:
This generic structure works well for most scientific scholarship, but your project may dictate modifications. Let’s discuss them!

1. **Title and author information.** Important to be able to refer to the paper, and to show who did the work. Choosing a good title is not always easy.

2. **Abstract.** This is your selling point. A good abstract will draw people in. Abstracts have to be short and to the point, and it gives your results. Writing a good abstract is very important, and is often done last.

3. **Introductory Material:**
   3a **Introduction.** Get everybody on the same wavelength. This explains the why, where, what, and how of the work in general terms. What have other researchers done before, what is your starting point? Why do you continue this line of work, what do you try to accomplish? Again, one often writes this section after sections four through seven are close to completion. The introduction typically ends with an outline of the remainder of the presentation.
   3b **Background.** This explains previously published work in more technical detail. It may describe the basic theory underlying the work, and the experimental or theoretical results needed to understand your contribution.

4. **Methods used.** What are your theoretical approaches, or your experimental tools? Here you show that you know what you are doing, how your tools are calibrated, and how you can make sure that your results are correct. It is OK to refer to previous publications. One repeats the minimal information that is needed to read the thesis independently, and refers to older work for the details.

5. **Results & Discussion**
   In some cases, 5a and 5b are presented together.
   5a **Results.** List your basic outcomes, and analyze carefully how precise your results are. You may not have a full-blown statistical analysis, but you need an estimate of precision that is justified somehow (unsupported statements are no better than speculation).
   5b **Analysis.** In this section you interpret your results to extract relevant quantities. Connect your results with the current state of the art in the field. What physics did you discover or confirm or refute? What are the consequences of your work and how do they impact the knowledge in the field?

6. **Conclusions.** This is a short repeat of the basic results of your work, but now in the context of what others should do to continue this line of work. What would you do next based on your scientific work. What is left undone and why? How should you or others further this line of investigation?

7. **Acknowledgements.** Acknowledges intellectual & technical contributions from others. If relevant, may acknowledge funding sources (why do we do this?)

8. **References.** This section includes numbered references in appropriate style.

9. **Appendices.** These often detail calculations, software programs, extensive data analysis that is too long to include in the paper, but must be recorded.
Assignment for next time:
Write a skeleton for outline for your thesis in this form, and include (at least) one paragraph on each topic outlining the specifics for your thesis. If you can include subsection titles at this point, do so. Get your advisor to read this, and initial it. Your advisor may suggest modifications to this basic form. If so, we will discuss the rationale for these in the next class.