

Schreyer Honors Program: Guidelines for Writing a Thesis

Undergraduate research is a unique opportunity for students to explore important scientific questions. The thesis should reflect the thinking, experimentation and results of the exploration. It is recognized that each thesis is necessarily unique in content. Therefore, the final format should be agreed upon by the student and the thesis advisor. The following guidelines are recommended. A good thesis will generally consist of the following sections: Abstract, Introduction, Materials & Methods, Results, Discussion, and References.

The Abstract is meant to serve as a succinct and accurate description of the thesis work that can be understood when separated from the rest of the thesis. In two pages or less, the student should describe the scientific problem (hypothesis or question) and its significance, the experiments that were done, the results, and the conclusions.

The Introduction should review pertinent literature and provide background leading up to the problem that is addressed by the thesis work. The student should strive to emphasize the significance of the problem. Finally, a summary of the experimental strategy used to address the problem should be provided. The introduction for a good thesis is typically a minimum of five pages.

The Materials & Methods should provide sufficient information so that the experiments described in the thesis can be repeated by others who are familiar with the methods. Techniques that are thoroughly described elsewhere in the literature should be briefly summarized and appropriately referenced. Techniques that are not well described elsewhere will require more detailed description.

The Results should be a narrative describing both the experiments and the results that were done to address the scientific problem. The text should succinctly describe each experiment and note key results. The student should take care to state the logic for doing the first experiment and the logic that links one experiment to the next. The results of the experiments are included within this chapter and each figure or table should be accompanied by a legend. A good thesis will typically have a minimum of 5 data figures that lead to conclusive results. Note, that conclusive negative results can be just as significant as positive results and unexpected findings can be highly significant. However, the experiments must include controls that allow one to distinguish between a negative result and an inconclusive result. If a result is inconclusive, then there should be a discussion of why it was inconclusive and the type of work that could be done to further explore the question.

The Discussion should begin with a brief summary of the experimental course that was taken to address the problem. Conclusions should be developed by integrating the results obtained by the student with results reported by other investigators. The strengths and weaknesses of the data should be discussed. Explanations for unexpected results or inconclusive experiments should be provided. The discussion for a good thesis will typically be a minimum of several pages.

The References are compiled at the end. Appropriate citations are expected to occur throughout the thesis. Students should follow model citations and the final list of references after what is found in published papers.