

Guidelines for the Senior Thesis Paper for EEB 475/476 & 495/496

Here are some guidelines to organize your final paper (again my apologies if this is already common knowledge....)

The main difference between papers from EEB 475 which are not part of a Senior thesis, is the length. In general, Senior thesis papers are longer than 15-20 pages and have more results and data analysis, especially if the student spent two semesters doing their senior projects (it varies though).

Senior Thesis should be written in a style that mimics the most common format for scientific papers in biological journals. Not all journals have exactly the same formats, but the following is a very common format. There are six sections and a Title:

1. Title
2. Abstract
3. Introduction
4. Materials & Methods
5. Results
6. Conclusion
7. Literature Cited

Each section has its own particular requirements as follows:

Abstract

This is a summary of the entire report. It goes first, but write it last. It should be approximately 150 words.

Introduction

This is a background to set up the landscape of related research and current knowledge. It includes citations of previous papers and their findings, and explains the reason your experiment was performed. It can also include an explicit expectation or hypothesis. Most of it should sound as though it was written before your experiment was performed, but a final paragraph commonly gives a short explanation of your methods and your major findings/conclusions.

Materials & Methods

This explicitly explains the procedures followed in the experiments. If the procedures a paper follows are the same as those from some other published paper, scientific papers will not detail the procedure again, but cite a previously published paper that explains the methods followed. If the procedures followed differ in any way from those described in the previous paper, the previous paper will be cited and then deviations from that procedure will be described in detail.

Results

This section should include a text summary description of all of your results. It should particularly highlight points of your results that you will analyze in your discussion. It probably will, therefore, have some small redundancy with your discussion. But this section should, for the most part, state nothing but the **facts** of your results. Your own interpretation of the meaning of those facts generally does not belong in this section, unless it is an interpretation that would be non-contentious or would be interpreted the same by most any scientist.

Discussion

This is where you include your analysis and interpretation of your results. It should refer to related research that helps shed light on the meaning of your results. It should repeat the

particular points of the data that lead you to your conclusions. It can include suggestions for improving the experiment you carried out. It can also include suggestions for future experiments to further elucidate your experimental system. The end of this section should be a paragraph or two that gives a nice conclusion or take-home message.

Literature Cited

The exact format of this section varies a lot from journal to journal. So I'll leave most of the format up to you, but require the following:

1. Include all information about the article, book, or book chapter, including its title and all authors (last names and first & middle initials, if included). Be consistent in format
2. Put them in alphabetical order by the first author's last name

Inclusion of websites is unusual, but acceptable, as long as they are known reputable sites. Do your very best to find an author and publication year (last update) for a cited website.

Other Important Points

General Points

Scientific articles are usually written in the 3rd person, but also in the first person. There are no length requirements. Be concise but thorough. Use 1.5- or double-spacing. All abbreviations should be fully defined at their first use in the paper, with the exception of very common and accepted abbreviations (e.g. mm, or kg), which don't need to be defined.

Figures and Tables

Everything in your article that is not text should be labeled as either a "Figure" or "Table". Figures are more common – if it's not very obviously a table, it should probably be labeled a figure. Every figure or table must be referred to at least once in your text. Figures and tables should be embedded in your report (rather than being attached to the end) close to where you first refer to them. Figures and tables are labeled sequentially using numbers (not letters, though letters can be used to differentiate subsections of a single figure). Figures and tables are numbered independently from each other (i.e. you can have both a Figure 1 and Table 1 that are unrelated to each other). Each figure or table should have a legend in the following format:

Figure 1. A short descriptive title phrase. Further detail explaining abbreviations, interesting points, and anything that's not obvious.

Reference to figures and tables is usually not made very directly, but you write directly about the data that are shown in the figure or table and then refer, in parentheses, to the figure that displays those data (Figure 1). If that's unclear, just check out any research article for an example.

Reference to Literature

Every article you cite must be included in the literature cited section. Every article in your literature cited section must be referred to at least once in your text or figure/table legends. Any time you make a point that is not common knowledge; you should have a reference to literature that exhibits that point.

For example:

For one author:

Birds are Dinosaurs (Gauthier, 1986).

For two authors:

In the middle of last century it was discovered that DNA has a double-helical structure (Watson and Crick, 1953).

For three or more authors:

A recent report comparing human and other primate genomes suggests that humans and chimps may have diverged into separate populations and, after a long isolation, interbred again before finally diverging less than 6.3 million years ago (Patterson et al., 2006).

For citing two papers at once put a semicolon between them:

Studies suggest that occurrences of wild-caught deformed frogs with extra hindlimbs may be explained by a natural infestation by trematode parasites, rather than exposure to environmental chemicals (Sessions et al., 1999; Johnson et al., 1999).