

**BASICS ON WRITING A SCIENTIFIC PAPER**

For an Ehleringer class

**Writing Style and Structure**

1. Please write a nice, solid introduction and add a concluding paragraph or summary.
2. An incomprehensible writing style and bad sentence structure will frustrate the people reading your paper, but more importantly, the efforts of your research and critical thinking will be obscured. Do yourself a favor and proofread. Are you satisfied with the product you produced? Was it readable to you?
3. Ditto for the organization of your paper: it's nice to read an organized, well structured manuscript that doesn't jump erratically from idea to idea, but rather, flows along logically. Use outlines to develop a progressive, logical sequence! They exist for that reason.
4. Organize distinct thoughts/ideas into separate paragraphs that together form an argument or an explanation. Remember the importance of a topic sentence. Do not start on page 1, line 1, and then pull sentences from one source at a time and append them until you have filled 5 pages.
5. A few spelling errors I can handle, but why should there be any when your word-processing program has a spell checker?
6. Always, use your own words. Paraphrase - do not transcribe - other people's text. With or without quotations and citations, direct quotes just make the text read choppy.
7. Plagiarism – avoid it! This should be obvious to most people, but make sure you know what plagiarism is. Again, always use your own words; it is really easy for us to find if you copied something from the web. If you do not understand plagiarism, GOOGLE the term on the web and take the time to read different presentations that describe the same basic phenomenon. Plagiarism is a violation of the University of Utah Student Conduct Code.
8. Do not use colloquial language and do not use abbreviations like “don't” or “isn't”. We are talking about a scientific paper here, not a personal essay or a pop magazine article.

Get in touch with your inner 'teen' and check out websites on writing essays. For instance, try <http://www.ipl.org/teen/aplus> and <http://members.tripod.com/lklivingston/essay/>

**Information and Content**

High scores are given if the TA feels the paper has pulled real substance from sources and put it together in a way that demonstrates an understanding of the topic. Your document should describe how all the details described come together in an explanation. Low grades for content are typically given to papers that do not seem to bring in much literature (often stretching a sentence or two into long paragraphs), give disconnected bits of information not related to a central idea, or contain many factual errors.

1. Ask yourself: why am I writing about this? Why does any one should care? Why is it interesting to me? Convey the 'why' to the reader.
2. Analyze and think about what you read: what is the literature telling you? What is it NOT telling you? Add your own insight.
3. Develop a thesis, or point of view, which you will support with facts or arguments. This should be apparent from your introduction. The following example tells the reader what the paper is about, and why it's interesting: "This paper will review the ecology and physiology of halophytic species around the Great Salt Lake. Living in some of the most stressful environments, halophytes employ physiological, biochemical and structural adaptations to thrive in extreme edaphic conditions where only a handful of plants are likely to survive." The author will then follow through and lay out the body of your essay accordingly, addressing the specific stresses and the adaptations, the landscape, ecology, physiology, biochemistry and other fascinating tidbits in a nice progression.
4. Always add a concluding or summary paragraph: re-state the thesis, discuss some possible implications or wider significance of your topic and add a final statement on the subject.
5. Try to stay within the 5-page limit. Six pages are permissible, but the TA will not look kindly upon 6+ pages. The TA will not read beyond 7 pages.

**Figures**

1. We require 3 independent figures or tables.
2. Each figure should highlight something interesting in your thesis.
3. The figures should be referred to in the text. The TA will reduce the score for figures that are only decorative and have no obvious relation to the text. The TA will also reduce the score for figures that are of low quality – always scan at the appropriate resolution.
4. Each figure must have it's own caption including figure number, description of the data/picture, and a reference.

E.g. "Figure 1: Millions of dollars invested in the last 4 years by the US government in the control of invasive species. Source: Smith, 2003"

5. The figure is referred to in the text using the number, e.g. "The economical costs of managing invasive species are increasing every year (Figure 1)".
6. The figure should not be too big or too small--somewhere in the range of 7 x 10 cm is appropriate. In other words, do not present me with three huge figures and little text, or conversely, postage-stamp sized pictures that the TA cannot read. The TA will deduct grades for poor scans, unappealing pictures, tiny fonts, redundancy or any other related graphics crime.

### References

1. Of the 15 required references, a maximum of 5 can be from websites. What the TA would really prefer is that you add such website references in addition to the 15 you found from peer-reviewed journal sources or books.
2. If you have to use a few websites, use only stable websites: [www.noaa.gov](http://www.noaa.gov), [www.co2science.org](http://www.co2science.org) Unacceptable websites are for example: [www.classnotes.com/35/co2/points/stuff](http://www.classnotes.com/35/co2/points/stuff), such strange websites may be temporary and the information incorrect. Pretty much any .com site is also unacceptable. The suffix ".com" stands for commercial. How much should you believe from people that are trying to sell you something?
3. All the references you use should be cited properly in the text and referenced correctly at the end of the document.
4. For the citation style you can use any acceptable format. We prefer that you use either the authors name and year of publication "(Smith, 2000)", or a parenthesized number "(2)" to indicate the source. That way you don't confuse the TAs. If you choose to a citation number, make sure that it corresponds to the right publication on your reference list.
5. The citations are used to: 1) emphasize a statement (e.g. "There has been much research on this topic (1,3,5,13-15)"), 2) provide the source of your information (e.g. "Halophytes are salt tolerant plants (Pittermann, 2001)") and 3) to indicate where more information could be obtained (e.g. "While I will not detail them here, this plant has many possible uses for humans (Smith, 1973)").
6. Whichever you use, use it consistently throughout the paper (i.e.: don't switch between using author+year and number).
7. Also be consistent in the reference style in your list at the end of the paper. A commonly used style is: author(s), year, title of article, source journal, volume, pages.

Example: Raven J.A. and D. Edwards (2001) Roots: evolutionary origins and biogeochemical significance. *Journal of Experimental Botany* 52: 381-401.

The instructor or the TA will be less picky about books, but always include: author(s), year, chapter and/or book title, editors, printing press and city.

Don't underestimate the instructor or the TAs -- they may check your sources. They may also copy chunks of your text and search the web for the exact same word sequences. This is an easy way to detect plagiarism. Thanks to GOOGLE, it is becoming easier to detect plagiarism.

### Overall Impression

1. Did you put in an earnest effort?
2. Is the paper generally well prepared, easy to read/follow with nice graphics and interesting material?