

# GUIDELINES FOR FORMAL LAB REPORTS

## Course Requirements

You are responsible for preparing and submitting one **formal lab report** on Exercise 12. Your report will be submitted to your Laboratory Instructor during at the start of your laboratory section as indicated in the course schedule. Reports submitted late (more than 15 min from the start of the laboratory period) will be penalized by a reduction of 10% from the total possible points for each day late and will receive a grade of "0" if turned in more than one week late.

The major lab report is to be written in the format of a research article in a professional scientific journal. Samples of journal articles may be reviewed on the course website. The report must be your own work. Any plagiarism, collusion, attempt to cheat, assisting others to cheat, or engaging in improper conduct is a serious violation of the University's honor code and will result in a zero score with other disciplinary action as deemed appropriate (i.e., submission of disposition to the offending students' permanent record). (see the course syllabus and <http://deanofstudents.utexas.edu/sjs/>)

## Writing Guidelines

The reports should be printed on 8.5 X 11 inch (letter size) white paper with at least 1" on all sides. All information included in the report must be typed. Text must be written in complete sentences, using correct grammar, syntax, and spelling. Since you are reporting on an activity performed in the past, use the past tense where it is appropriate. Most text should be written in the third person with avoidance of personal pronouns. Sentences and paragraphs should flow in a logical sequence so that the reader can easily understand the contents. Abbreviations need to be spelled out when first used. Include tables, figures, and other illustrations whenever you think they are suitable. The report should be double-spaced, except for the abstract and list of references, which should both be single-spaced. Except for the title page, all pages should be numbered. The report should be about 10 pages, including a title page and a list of references cited but excluding figures, graphs, and tables. Please do **not** put the reports in covers nor special binders.

## Formal Lab Report Grading

The formal lab report will be worth 10 points (grade out of 100 % x 0.10pts) toward your total course grade. The formal report grade is based on the following criteria:

*Prior to Lab: Library Modules Handout	* 5%
*Prior to Lab: Experimental Design (pp. 325-326)	* 5%
Title & Abstract	5%
Introduction	15%
Materials & Methods	10%
Results, including figures, illustrations, etc.	20%
Discussion	20%
References	5%
Style, flow, grammar, spelling, labeling, etc.	10%
**Participation of Peer Review the following week	**5%
Total	<b>100%</b>

**\*Important:** Failure to complete any of the Prelab components (library modules, experimental design pages, AND Quest Ex 12 Prelab) will result in zero scores (> 10% of the overall course grade).

**\*\*Important:** Failure to include the Peer Review sheet will result in a 10% dock of the overall grade.

## Components of the Prelab for Exercise 12:

The prelab for Exercise 12 consists of 3 components:

1. the six library modules completed with concomitant answers to questions on handout
2. the completed experimental design assignment (pp. 325-326 in lab manual).
3. the regular Prelab assignment in Quest consisting of 5 questions

## Peer-review Draft:

Writing should be viewed as a process –one that can take time, especially for a significant assignment like the Formal Report. You should seek assistance and feedback from the Undergraduate Writing Center at various stages in your writing process but especially early on. Before beginning the writing process of your Formal Report, you should read the Peer-Review Guidelines and Evaluation form carefully since it is an indication of the grading rubric that will critique your paper. The initial version of your Formal Report is to be submitted in hardcopy for peer-review and digitally via Blackboard SafeAssign.

## Submission of the Formal Report:

The final copy will also be submitted in hardcopy and digitally via Blackboard SafeAssign. Digital submission via Blackboard SafeAssign will be done to exclude the reference citation section. More details concerning the digital upload to Blackboard SafeAssign will be provided in class.

## Components of the Reports

Page one of your report should contain only the following information, arranged on the page as shown below:

**Formal Report Title**  
**Your Name**  
**BIO 206, Semester, Year**  
**Unique, Lab Instructor Name**  
**Date the report is due**

**Title:** the title succinctly describes the whole report in twelve words or less. Avoid cute titles. Choose a title for the report that you think best describes what you accomplished in the exercise. Do not use the title of the laboratory exercise that is given in your laboratory manual. The title should include the independent and dependent variables involved in the relationship between the independent and dependent variables involved in the investigation. Include the scientific name of the organism in the title.

The body of the report (the substantive information of the report) should follow the title and begin on page two. The body should be written in sections and each section should begin with a heading. The following sections, with their appropriate headings, must all be included and presented in the order listed below.

A list of cited references with all the authors is to be included as the last section of the report. Do *not* cite individual authors in the body of the report rather, cite references throughout the paper by numbering them according to the alphabetical order listed in the Reference section with the appropriate numerical digit in brackets, (e.g. [1]).

**Abstract:** Begin page two of your report with the title (the same title used on page one). Write the abstract below the title on page two. Do not put any other information on that page of the report. The abstract should be no longer than half a page and address the purpose of the study, briefly describe the methods used and describe the experimental design. It should clearly describe your main results and conclusions or interpretations as they can best be summarized. Do *not* cite references in the abstract. Write the abstract single-spaced in paragraph form, without including any tables, figures, or other illustrative information. Even though the abstract is the first component of the body of the completed report, you may find it easiest to prepare the abstract last.

**Introduction:** (Double spaced) Begin page three of your report with the introduction. The introduction provides appropriate background information that helps prepare the reader to understand the remaining contents of the report. It should introduce the question(s) you are asking in your research project, briefly provide an overview of the relevant background literature, describe the general significance or appropriateness of some of the methods. Finally, it should also include the hypothesis being tested or the objectives or purpose of your work. The introduction is where most references are cited in scientific publications. This section should not be a page of direct quotations.

**Methods and Materials:** (Double spaced) This section describes the procedures, methods, techniques, organisms or cultures, experimental/sampling designs, treatments, controls, and instruments used to conduct the work, and any data analysis methods used to obtain the results described in the paper. It is not a list of materials used. This section is not a set of directions of a lab manual. The methods section should *not* include any data, but only a description of the biological material studied and the means employed to collect data and obtain results. Be selective in what you include in this section, describing only methods and materials that help the reader to generally understand what was done. Provide relevant details describing your subjects, The purpose is to outline what one would do to reproduce your experiment. The entire procedures section from your laboratory manual should *not* be included in your report. Assume the reader has the same level of laboratory expertise as you do.

**Results:** (Double spaced) This section will likely be the longest part of your report, as it is the central section of most reports. The results section should include the actual data you gathered in the laboratory, displayed in a concise, logical format. Figures, tables, and other illustrations are all appropriate for the results section. Embed figures and tables within the text. Introductory text should precede figures and tables. Figures and tables should be constructed and labeled in keeping with standard conventions. Tables and figures should be self-explanatory by itself. The results must contain well-organized and well-written text, in paragraph form, which explains the graphic data. The information in this section should flow naturally from one topic to the next, so that the reader's interest is sustained. Be careful that this section contains only results you observed and *not* conclusions or explanations of the results.

**Discussion:** (Double spaced) This section contains your interpretation of the results you obtained. Are the questions posed in the introduction/hypothesis answered? Use your data and results to explain your results and explore other alternate explanations. Does any of your data appear to support an alternate explanation? Explain what you learned as a scientist (not as a student) from doing the experiment, whether or not the results you obtained were the expected results (and why you might not have obtained the expected results), and/or what might be extrapolated from the work you did. You should also compare your results to those obtained by other investigators and cite the references in which these scientists reported their experiments. Explain why your data many not have agreed with your hypothesis and how the variables can better be controlled in future experiments. Remember that data should *not* be included in the discussion section of your report but you may refer to your results section.

**References:** (Single spaced, 2<sup>nd</sup> line indented five spaces if APA style). This section should follow immediately after the discussion. List the references in alphabetical order by the last name of the first author of each reference. Recall, you must cite references in the body of the paper by numbering them according to the alphabetical order used here with a digit in brackets, (e.g. [1]). You must cite properly at least 15 references in your report. (Ten references that you may find useful have already been provided for you on the course website and library module handout).

There are several standard formats for a list of references. Use a format consistent with one used in a scientific journal.

You may find writing manuals helpful. For example:

- Pechenik, J.A.(7<sup>th</sup> edition). A short guide to writing about biology. New York: Longman.
- Raimés, A. (2009). *Pocket keys for writers*. Boston: Houghton Mifflin.
- Rosa, A. & Eschholz, P. (2009). *The writer's pocket handbook*. New York: Longman..
- *See the course website for more resources.*

Two commonly accepted formats used are the American Psychological Association (APA) style <[www.apa.org](http://www.apa.org)> or the Council of Biology Editors (CBE)/Council of Science Editors (CSE) <[www.councilscienceeditors.org](http://www.councilscienceeditors.org)> documentation styles. See samples of these two styles below.

Whichever citation style you choose for your reference list, use the same format consistently throughout the entire list. There are online programs that can help you with reference formatting: <<http://bruteforcestudyguide.com/essaywriting/apastyle.html>>

Sample references for journals, books, and online articles are listed below. For each two format styles are given: APA style first; CBE style second.

### (Journal)

Moffett, M. W. (2002). Ants and plants: Tree fortresses. *National Geographic*, 197, 84-97.  
Moffett MW. Ants and plants: Tree fortresses. *National Geographic* 2002; 197: 84-97.

Simon, H. A. (1974). How big is a chunk? *Science*, 183, 482-488.  
Simon HA. How big is a chunk? *Science* 1974; 183: 482-488.

Watson, J. D. & Crick, F. H. C. (1953). Molecular structure of nucleic acids. *Nature*, 171, 737-738.  
Watson JD, Crick FHC. Molecular structure of nucleic acids. *Nature* 1953; 171: 737-738.

### (Book)

Brown, J. W. (1988). *The life of the mind*. Hillsdale, New Jersey: Erlbaum.  
Brown JW. The life of the mind. Hillsdale, New Jersey: Erlbaum; 1988. 240 p.

Crowcroft, J. W. (1966). *Mice all over*. Chester Springs, PA: Dufour.  
Crowcroft JW. Mice all over. Chester Springs, PA: Dufour; 1966. 123 p.

Luther, W. & Fiedler, K. (1965). *Guide de la faune sous-marine des cotes méditerranéennes*. Neuchâtel, Switzerland: Delachaux et Niestlé.  
Luther W, Fiedler K. Guide de la faune sous-marine des cotes méditerranéennes. Neuchâtel, Switzerland: Delachaux et Niestlé; 1965. 322 p.

### (Online)

Online Publication with print equivalent:

Huxley, T. H. (1880). The physiology of the common crayfish. In *The Crayfish: An introduction to the study of zoology* [Electronic version]. Retrieved June 28, 2003, from [http://www.biology.ualberta.ca/old\\_site/palmer.hp/thh/crayfish.htm](http://www.biology.ualberta.ca/old_site/palmer.hp/thh/crayfish.htm).

Huxley T H. The physiology of the common crayfish. *The Crayfish: An introduction to the study of zoology*. [Electronic version]. Available from: [http://www.biology.ualberta.ca/old\\_site/palmer.hp/thh/crayfish.htm](http://www.biology.ualberta.ca/old_site/palmer.hp/thh/crayfish.htm) via the INTERNET. Accessed 2003 June 28.

Online Publication with no print equivalent:

Jones, S. (2003). Essays: Cruel and unusual punishment: Painted glassfish. *Sea Adrift, the collected, creative musing and wanderings of Stacey Jones*, Retrieved June 28, 2003 from <http://jolieve.polestar.org/viewarticle.php?articleid=91>.

Jones S. Essays: Cruel and unusual punishment: Painted glassfish. *Sea Adrift, the collected, creative musing and wanderings of Stacey Jones*, Available from: <http://jolieve.polestar.org/viewarticle.php?articleid=91> via the INTERNET. Accessed 2003 June 28.