Guidelines for preparation of laboratory reports (Biol 3005 and 3006)

Dr. Jim Duston has created a set of guidelines for his courses in aquaculture. These guidelines provide an excellent summary of the main elements of a laboratory report and what should be included in each element. As with most courses, some of these instructions are fairly specific to Biology 3005 and 3006 to reflect writing practices in the field, as denoted by the comment “Course specific” in this annotated copy. The annotations in this copy also offer clarification on the guidelines, as well as links to additional resources to help you with your writing. As for all assignments, be sure to follow the instructions you have been given for your particular course and to clarify any concerns with your instructor or TA.

1. General Presentation: Margins 1 inch wide all round, fully justified. Font:12pt. Style: Times New Roman. Page number top right. Single spaced for Abstract and list of References, 1.5 spacing for the rest. A cover page is not needed. Put the title, your name and date at the top of the page, then proceed with the Abstract. Always write scientific reports in the past tense! Good writing is concise: correct grammar, no unnecessary words. The first time you write a species name, include the latin name in italics. Thereafter, do not repeat the latin name.

2. Abstract: A summary of the report in one paragraph, about half a page:
What was the purpose: Summarize the primary thesis or goal of the study. What was done: Summarize the methods. What was found: State the main findings supported by some data. Never cite references. Never cite figures.

3. Introduction: Assume the reader knows nothing! Start by providing some background information on the subject supported by citing a reference or two. Then state the purpose of the lab. Cite references as surname year format: one author (Meng 1993), two authors, state both names (Titelman and Kiorboe, 2003), three authors (Batty et al. 1986). If citing a book, include the author (or author of the chapter) and page number: (Hara 1971 p.100).

4. Materials and methods: Include sufficient information for the reader to be able to repeat the work. For most reports you need to do is write "see schedule", and attach the handout to your report. However, if the handout is lacking important information, be sure to add the details to your report.

5. Results: This section states the main results, and guides the reader through the figures by citing them at the end of the sentence. Example: Oxygen consumption differed between species. The rainbow trout had the highest oxygen consumption, >2000mg/kg/h (Fig. 1).

In this section:
NEVER refer to figures at the beginning of a sentence. E.g. Figure 1 shows... It can be seen from Figure 1 that...
NEVER attempt to explain or discuss the results.
NEVER cite references.

Figures and tables: require a full caption, allowing the reader to understand the figure/table without having to refer to the rest of the report. The caption is positioned BELOW figures, ABOVE tables. Diagrams completed during the lab class are part of the results as a Figure. In the caption, always state the species name.
Arithmetic mean values must be accompanied by the standard error (SE) of the mean. If body weight was measured to 0.1g, then cite the mean to the nearest 0.1g, and the standard error to one additional decimal place. Example: The mysid shrimp mean weight was 32.4 (0.12) mg. Minitab is a quick way to get descriptive statistics. Enter data in a column. Click Stat, Click Basic Statistics; Click Display descriptive statistics.

6. Discussion: Your interpretation of the results. How do they relate to the physiology/ecology of the animal? Begin the discussion with a short paragraph (about 5 lines) summarizing the main discussion points, without blindly repeating the results. Subsequent paragraphs deal with each of the discussion points stated in the opening paragraph. Using the references in the handout compare (how are things similar) and contrast (how things differ) the lab results with published literature and/or previous years’ data. If the results don’t make sense, what were the problems, and how might they be resolved? End the discussion with a short summary: "In conclusion....."
7. References: List only the references cited in your report. Format: see instructions or visit http://libraries.dal.ca/writing_and_styleguides/style_guides.html

8. Proof read your work. Does each sentence make sense? Spelling errors?
Sections: Title, Abstract, Introduction, Methods, Results (text, Figs+captions), Discussion, References.

Table Preparation
Tables must follow the style used in scientific papers: no vertical lines and a minimum of horizontal lines.

Step 1: Create Table. Select correct number of rows and columns
Step 2: Add titles to columns/rows, then add data. Centre the data in the cells.
Step 4: Add caption. Remember, it must allow table contents to be understandable independent from rest of report.
Example.....

Table 1. Mean (standard error) body size and fur colour of the three species used in the metabolism trials.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Height (cm)</th>
<th>Weight (kg)</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat</td>
<td>30 (0.2)</td>
<td>5.2 (0.24)</td>
<td>Black</td>
</tr>
<tr>
<td>Dog</td>
<td>70 (0.5)</td>
<td>40.5 (0.57)</td>
<td>Brown</td>
</tr>
<tr>
<td>Mouse</td>
<td>10 (0.01)</td>
<td>0.05 (0.001)</td>
<td>White</td>
</tr>
</tbody>
</table>

References: Format

Journal Article

Book Chapter

Website

Warning: Websites offer a very quick and useful source of information that is often accurate. For courses taught by me (J. Duston), I will accept a sensible use of web information. However, citing the original scientific paper that reported the information is best. Excessive use of websites will cost you marks. A student who cites only web references and fails to use the references listed in the lab handout will get a poor mark.

Version: Sept 2012