

Grading Outline and Guide to Authors for Scientific Paper

General Formatting Considerations

50 points

- page layout should be “normal”, that is 1 in. all around and in, Times New Roman 12pt font
- all text should be *double spaced* and *left-justified* starting with the Abstract
- each section should have a heading preceding the actual text body, left-justified, and in **bold**
- paper should have the following layout:
 - o **Title Page**
 - o **Abstract**
 - o **Introduction**
 - o **Materials and Methods**
 - o **Results**
 - o **Discussion**
 - o **Literature Cited Page**
 - o **Figures or Tables**
- starting with the 2nd page, a page heading containing your last name and page number should be present for the rest of the paper, and should appear in the top right corner starting with page 2
- any species names should be *italicized* throughout the document, you want the organism of interest to stand out amongst the rest of text
- NO page length minimum or maximum, but your grade will reflect on effort put into the paper

Title Page (2 pts)

Title Statement

2 points

- a single, concise, statement of the research to be presented in the document is paramount
- should contain pertinent information from the experiment so other scientists and researchers can find it easily through a key word search, i.e. “species name” of the animal you used is, an example
- only proper nouns, verbs, and the like should be capitalized, words like in, the, at, of, on, etc... are not capitalized in this statement
- FORMAT:
 - o should be on the first page of any scientific document
 - o should have an entire page dedicated to itself
 - o should be “centered-justified” on the page, the very first line of this page, at the top
 - o your name “center-justified”, followed by your institute of affiliation, followed by the address
 - o your name and affiliation should be located at the bottom of the title page

Text Body (44 pts)

Abstract

6 points

- the first section, containing multiple sentences of text, to appear in ALL scientific papers
- should contain no more than 250 words of text and 5 – 7 sentences with particular information
- this section is a summary of the entire paper, it essentially contains information from the important sections of the paper, i.e. Introduction, Methods, Results, and Discussion
- you should NOT add references in this section, save references for Introduction and Discussion
- use some of your reference articles to help write this section and to see how to maintain flow and what information you should include in this section

- **FORMAT:**
 - use the following outline to help present your ideas
 - 1 – 2 sentences containing background information, major concepts of study
 - 1 - sentence describing predominant methods used to generate data
 - 2 - sentences about results found during the experiment
 - 1 – 2 sentences discussing results and future work or direction
 - like the other sections this one should be double spaced and precedes the introduction
- this section is the **HARDEST** to write and is usually saved for last so you have the other sections to go by and know the proper information to include
- follow the same general formatting which includes a **bold**, left-justified, header on the first line

Introduction

12 points

- the second section of ALL scientific papers containing background information including previous work
- define the problem that your paper is concerned with, the central theme of the entire study
- what is the nature and scope of the project you are performing, why is it important
- provide the pertinent background information from other literature previously published
- this section should contain most if not all of your literature cited references for the paper
- **FORMAT:**
 - all introductory material should start with general or broad topics and information
 - as the text continues you should become more specific with the information
 - finally, your last few sentences should be the most specific and tell the reader the most about what exactly you are studying and why
 - the previous includes information about the organism, major concepts studied, past work, holes in the literature, and where your study fits with other research and why it is needed
 - the very last sentence should be the “hypothesis statement” or question that you will be addressing in your paper
 - all text should be double spaced starting after the header indicating this section
- proper citation is important and mandatory, past work must be accredited and strengthens your argument
- properly cite references by picking ONE of the following and using it throughout,
 - (Burt and Miller, 2003).
 - (Burt et al., 2003).
 - (Burt and Miller 2003).
 - (Burt et al. 2003).
 - these are used after a sentence that contains information from your reference
 - always ended with the “.” it is part of the sentence, in this case the end
 - according to Burt and Miller (2003)
 - according to Burt et al. (2003)
 - according to Burt and Miller, 2003, predators
 - according to, Burt et al., 2003, predators
 - this type of citation is found within the text let the reader know you are about refer to this authors previous work
 - find an example in your literature cited papers and use it, keep all citations in similar format
- this section is very important but not easy to write
- also keep in mind that this section enables you to add in your own “flavor” and tone to your writing, this is where your personality and writing techniques can be employed to set you apart from other authors

- follow the same general formatting which includes a **bold**, left-justified, header on the first line

Materials and Methods

6 points

- this is typically the easiest section to write and thus is typically written first
- you should directly state what you will be measuring, that is what species you will be using, the location of the study, and what you are attempting to measure and compare (i.e. feeding rates, concentration, etc)
- this section includes the important materials and methods used to generate data presented in your paper
- make sure to include only pertinent information, there is a clear distinction between common knowledge (most scientists assume you would “zero” the scale before using it) and important techniques used
- any scientist reading your paper should be able to reproduce your experiment, more-or-less, based on what you include here
 - you need to be very clear and describe the exact methods used to gather data
 - *we will go over what this looks like and how to word in class in more detail*
- the experimental design of your project, including materials, methods used, and statistical analysis show up in this section
- the last information to show up in this section is the descriptive statistics used on the data (mean, std etc...) and the inferential statistics (regression, ANOVA) used to test your data
 - you should describe all tests used and include how “confident” you want to be
- FORMAT:
- follow the same general formatting which includes a **bold**, left-justified, header on the first line

Results

8 points

- keep this section simple, to the point, and include all results found based on what you said you would be testing from the materials and methods section above
- a common error and problem with this section is students wanting to include interpretations of their results instead of simply listing whether or not there was a statistical difference
 - we will clearly distinguish the “results” from the “discussion” sections in our paper
 - save any discussion of “why” for the next section
- reference to tables and/or figures will also show up in this section, but raw data should never be found in the text or included in the manuscript
 - good figures usually include graphs of statistical analysis like a linear regression but can also be a picture of a study location for example
 - label tables and figures in text as (refer to table 2) or “as shown in figure 1” are examples
 - tables and figures should NOT, however, be placed in the text body, always place them at the end of the document, refer to the last section of this handout for more instructions
 - do NOT use a table to simply list raw data, the only numbers that should show up in a manuscript are descriptive statistics like average, standard deviation, etc...
- FORMAT:
 - this includes statistical tests and if, in fact, you have found a difference between your samples
- follow the same general formatting which includes a **bold**, left-justified, header on the first line

Discussion

10 points

- Do not restate the results at the beginning of this section
- this section is dominated by explaining or interpreting the results that you obtained from the study
- it should also include if your hypothesis was supported or rejected in favor of the null hypothesis

- Describe how your research fits into the context of existing knowledge outlined in the introduction.
- What additional questions have been raised by your research and what future research that might be beneficial to explain areas you could not
- you also have the ability to explain why your results were not what you expected or what might have went wrong during data acquisition, you have more freedom here, within in REASON
- you may also bring the figures and tables to guide the reader to a point you want to make, do NOT simply restate the results to use the figure or tables, instead use it to make your argument stronger
- FORMAT:
 - you should use the introduction as an outline for this section, i.e. any material that shows up in the introduction should appear again in this one
 - you should NOT introduce new material into this section, any unused references should appear in this section as well
 - use of literature cited references is important and mandatory for this section and will ultimately strengthen your entire paper
- follow the same general formatting which includes a **bold**, left-justified, header on the first line

Literature Cited Page (4 pts)

Literature Cited

4 points

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- this is the very last section of ALL papers in scientific writing but is very important
 - you need a **MINIMUM of 5, primary, peer-reviewed, journal articles in your paper**
 - this is a minimum number, the more articles you have the stronger your argument will be
 - using the minimum number will also reflect in your grade that you have done the minimum amount to get your grade, keep this in mind when writing your paper
 - any articles that you have cited needs to be referred to in this section and should include the following information (not necessarily in this order, depends on which format you decide to use):
 - name of author(s)
 - year of publication
 - name of journal article
 - name of the journal
 - volume, series, number, etc...
 - pages the article appears in
 - the actual format is different for each journal
 - you can chose the format you want, pick one from a journal (either one you are using or one you ran across in your literature search) and use it for every reference, keep it consistent
 - FORMAT:
 - you should start this section on a NEW page and continue it onto another if needed
 - start with the **bold** header for this section and proceed to the actual references
 - references should be in alphabetical order by primary author last name (first author to be listed in the article), follow the format you chose for 1st and middle initials
 - references are single *spaced* within one reference but *double* spaced between references
 - if a reference takes up more than one line you must indent every line after the 1st by ½"
 - references are NOT numbered, simply list in alphabetical order to completion
 - unlike the title page, you should include the header with your last name and date on it

- any tables or figures should appear at the END of the document NOT within the results section
- FORMAT:
- Tables first, then Figures
 - all figures should have a legend at the bottom
 - all tables should have a title at the top
 - Legends and titles should describe what the table or figure is depicting
 - only ONE figure or table should be placed on a page, if you have one table and one figure you should have a separate page for each
 - scale the figure and compose the table in such a way that it is clear, concise, easy to read, and relevant to the text from which it is referred to
 - don't randomly throw a table or figure into your document because it looks good, in real scientific writing, pages come at a premium. All Tables and Figures must be referred to in the text.
 - center-justify the entire figure or table in the page with its caption, keep formatting the same for all figures or tables
- unlike every other section this one does NOT need to have a header describing what it is, but you should have the page number-last name header included in the top-right