

## Scientific Writing Guidelines

### General Writing Guidelines:

This document will provide you with information as to the expectations for scientific writing assignments in this course, which is generally applicable to the preparation of professional manuscripts in all areas of Biology. Of course, when work is prepared in certain fields or for a particular purpose/journal some expectations may be somewhat different. For example, referencing style may be different in different fields due to “normal practice”, and frequently varies somewhat based upon the journal in which you wish to publish. For this course, you will be completing two different types of written assessments: reports and an article. In both cases, they will include the same type of general sections. However, the length of these sections and/or the depth of detail required will differ. The information below provides general information, while more specific details will be provided for each assessment. If you have any questions about the expectations for your assignments, please contact your Instructor for clarification.

### Style & General Expectations

Your ideas, their organization, and their presentation must be uniquely yours and cannot be “recycled” from your previous work (from this course or another) or derived (even in part) from the work of another (individual or published in any form). You are not allowed to use AI-based technology to assist you in any way. You cannot use AI-based technology in order to perform your analysis or to generate figures/tables. You cannot submit hand-drawn figures, but rather must use computer software for their generation. You cannot use AI-based technology to assist in paraphrasing or editing.

All information derived from another source must be incorporated with your own ideas and presented in your own manner. The source of this information must be clearly indicated through the use of a citation mark within the text, and a complete and proper reference (see below) must be included at the end of your document. Inappropriate or insufficient referencing will result in the deduction of marks and/or referral for Departmental Review in the case of serious infractions. Quotations are not allowed, and any information presented in this manner will be ignored (assuming proper citation and referencing is used).

Generally, all portions of a scientific article should be written in a formal style using the third person. You should ensure that you are making use of the spelling and grammar check features in Word during your editing process. When a word range is indicated for a particular assessment, marks will be deducted based upon the amount of words over that maximum, with one mark being deducted for each 50 words (or portion thereof) above the maximum. An allowance of 10% over the word count is provided prior to marks being deducted.

As mentioned above, both Reports and Articles will contain the same sections. However, the Report is a briefer communication. In both cases, the Methods, Results, and Reference sections do not have word limits. The following word limits will apply to the remaining sections:

Section	Word Limit	
	Report	Article
Abstract	200	250
Introduction	500	1000
Discussion	500	1000

## **Formatting**

Your report should be left aligned and include indentations. Text should be 12-point in size and should be double-spaced, except for figure and table captions, which should be single-spaced. Generally, a serif font (eg. Times New Roman) is used for work that will be printed, and non-serif fonts (eg. Arial) are used for online resources. For this course, either serif or non-serif fonts may be used for your submitted work. All figures and tables must be contained within the page borders and should never be split across pages. Individual section headings (ie. Abstract, Introduction, etc) should be bolded and left aligned. Do not include subheadings within your text (with the option to do so only in the Methods section). You must submit your report as a single pdf file, with the tables/figures inserted within the text appropriately (see below).

## **Title**

Your title must be included at the beginning of your assignment. Please include your name and lab section below your title. The title of your report needs to be complete and provide a good summary of what was investigated. The title of a scientific report or article is written similar to a sentence. The aim is to make it informative, but also a brief as possible while doing so.

## **Abstract**

This is a summary of your work and includes a brief summation of your ENTIRE report, written in a proper paragraph. Include an introductory sentence that highlights the purpose/importance of your work. Briefly describe the methods employed, being sure to include specific, key results, and provide your overall conclusions. You do not need to provide references within your abstract, as the same information will be provided in further detail within the report. Unless you need to use an abbreviation more than once, write it in full, and then provide the abbreviation in the remaining text of your article during its first use.

## **Introduction**

Include an introductory paragraph which highlights why your report is of interest. You must state your general purpose in the introductory paragraph. You will then summarize the relevant background information that relates to the investigation being undertaken. Explain, with references to relevant literature, the general theory of your topic, focusing on the specific processes you are investigating. Conclude your introduction with a brief summary of the methods you will employ and how they relate to addressing your specific research hypotheses to be tested. Do not forget to state what these hypotheses are in this paragraph. DO NOT state your results or conclusions anywhere within the introduction.

## **Methods**

Summarize the methods used in your experiments and reference them to the lab manual. They should be written in proper paragraphs, with each procedure clearly identified. Never use point-form notation, bullet-point lists, or numbered lists of instructions. Here (and throughout your report) do not refer to your experiments by the numbers used in the lab manual, but by the method used/experimental questions. Tables or figures are to be avoided in this section. Methods should include all key details, such as volumes and concentrations used, time and temperature of incubation, etc. You do not need to include basic lab procedures, such as the need to balance centrifuge tubes or how to do so, as you can assume that your reader has a basic understanding of the laboratory procedures.

## **Results**

Your results section must be organized in a logical manner and provide context for your results through the inclusion of written text. The text within the results section is supported by your tables/figures, not the other way around. All of the key information that you include in your tables/figures must be presented within the text and referred to by number. You should not list all of the values you obtain within your text, but you need to clearly indicate what was measured, how you did any calculations, and the general trends observed. When presenting statistical analyses, you need to include your tested hypothesis, the final calculated values/ranges, and its conclusion. DO NOT discuss the accuracy or validity of your results or interpret their meaning in this section.

Tables and figures should be inserted in your report immediately following the paragraph in which they are first mentioned. Tables and figures must be numbered, referring to the specific table/figure number within the text. Tables and figures also require formal titles and captions. The titles/captions for tables go ABOVE, and for figures go BELOW. Do not include an Excel-generated title on your graphs. The title and captions must be informative, providing your reader with the general procedures used and stating what is depicted in that table or figure. Appropriate units must be included, and formatting should ensure easy interpretation by your reader. Any averaged values should always include standard deviations in tables and error bars on graphs. Key observations should be stated. This additional information is provided in the caption following your title.

Results are not necessarily always presented in the same order in which they may have been collected in the lab. However, keep in mind that you must present it in a way which makes logical sense, and allows you to provide somewhat of a narrative as you progress through this section. Specific requirements for data inclusion will be provided in the separate assignment documents on Nexus.

## **Discussion**

This section should be a comprehensive analysis and discussion of the implications of the experiments performed and your obtained results. The discussion should put your results within the context of established scientific knowledge. This should include referenced information from the lab manual and other published sources. Do not simply repeat your results (you already presented this!), but discuss them along with new information or considerations. Interpret the validity of your results, and draw conclusions as to whether they agree or disagree with previous research. Suggest explanations for how or why a particular system works. Do not forget to discuss potential sources of error or limitations of the procedures employed. Also, make suggestions for means of improving your work and potential future inquiries to be made. Your final 1-2 paragraphs must specifically address your hypotheses and state the overall conclusions to be drawn from your report. Conclude with a final statement which stresses the importance or relevance of your work.

When writing your discussion for a report, focus more on communicating the interpretation of your results and sources of error, rather than on future applications. The use of literature in the discussion of a report would be reduced in quantity compared to in an article as well, with it being used to support your results or, if contradictory, with a possible reason given for this contradiction.

## References

References will be needed throughout the report whenever you present information from an outside source (journal article, textbook, lab manual, websites, etc.). You may use the lab manual (required in the methods section!) and textbook, but you cannot use the course slides, lab tutorial videos or lectures as sources. Peer-reviewed literature from scientific journals are viewed as the most reputable sources, followed by edited books, etc. However, it is better to use a less robust source (eg. website) than to fail to reference information entirely. Please make use of the resources available through the library at <https://library.uwinnipeg.ca/help-with-research/index.html> to aid you in your assignment as needed.

You will need to use the CSE Citation-Sequence system. We use the Number Systems Style, which requires superscript numbers in order of appearance following your cited statement or at the end of the sentence, with references listed by number at the end of your report. If you cite the same source more than once, reuse the previously assigned number. When citing from books and the lab manual, each section or chapter should have a separate reference entry. For examples of proper citation using this system, please refer to: <https://www.scientificstyleandformat.org/Tools/SSF-Citation-Quick-Guide.html> and follow the CSE numerical format (ordered by number, based upon order of appearance)

Your Library Presentation Tutorial will have provided you with more information on the effective use of sources, how to properly incorporate and cite them within your text, and how to format your references. Failure to include appropriate citation and referencing will result in grade penalties (for minor errors) and/or referral to the Departmental Review Committee in the case of serious offenses.

## Academic Integrity Policies:

This course has a zero tolerance policy for academic misconduct / plagiarism. Failure to include or to properly cite external references will be penalized. Ongoing failure to reference material will be treated as academic misconduct and will be subject to departmental review. Please ensure that you view the UW Library tutorial "Avoiding Plagiarism" at <https://www.youtube.com/watch?v=UvFdxRU9a8g>. It is considered plagiarism to use phrases that are the same or very similar to another work, even if you cite the source. Do not use direct quotations. The use of work prepared by any other student, outside service, or generative AI is deemed academic misconduct: you cannot submit any work that is not your own. Utilizing another student's work to copy the ideas and their manner of presentation, even if paraphrased is also considered academic misconduct. Any use of AI programs to prepare your text is not allowed in this course. Familiarize yourself with what constitutes plagiarism and referencing expectations as set out by University guidelines at: <https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>. Be certain to contact your instructor if you are uncertain of these requirements.