

Guide for the Preparation of Written Reports
READ CAREFULLY !

A. Formatting

1. Use 12 pt Times Roman for everything
2. Use double space for everything
3. Use 1 inch for all margins (left, right, top, bottom).
4. The title page should not have a page number, and the first page of text is Page 1. Thereafter, use pagination at the center bottom of each page.
5. Indent 0.5 inches (exactly) at the beginning of each paragraph. Do not depress spacebar to indent.
6. Advance to the next page (at end of abstract, for example) by depressing “Ctrl-Enter”. Do not depress “Enter” multiple times until the new page is reached.
7. Do not add any weird formatting, such as spaces before paragraphs. Simply double space everything and indent 0.5 inches at the beginning of each paragraph!
8. In the text, citations should be listed as (examples having 1, 2 or 3 authors):

(Miller, 2007)

(Miller and Smith, 2007)

(Miller et al., 2007)

If a particular sentence requires multiple citations, list the citations chronologically and separate each with a semi-colon:

(Miller et al., 2007; Smith and Wesson, 2008)

Note that “et al.” is the abbreviation for the Latin *et alia*, and the phrase (meaning “and others”) is used when more than two authors exist for a reference. Therefore, a period occurs after the “al”, and a period does not occur after the “et”.

9. The reference list should be at the end of the report, starting on a new page. My preference is that references be in alphabetical order by first author’s last name.
10. In Word, select “Insert”, “Symbol” and select from the “(normal text)” font for a list of special symbols. Alternatively, use the “Shortcut” by depressing “Alt” and a sequence of numbers on the *numeric pad*:

The Degree Sign:

Alt-0186 (do not use superscript “Oh”)

Multiplication:	Alt-0215 (<u>do not</u> use “ecks”)
Division:	Alt-0247
Middle Dot:	Alt-0183 (<u>do not</u> use one of two bullets)
Plus-Minus:	Alt-0177

Let me repeat: Do not use a superscript “O” or “0” for a degree sign. Do not use an “x” for a multiplication sign.

11. Tables: Tables have captions located *above* the table, and begin with the number in bold (e.g., “**Table 1.**”). Only horizontal lines appear in tables. Tables appear immediately after their first reference in the text. Do not fit a single table on more than one page.

Figures: Figures have legends which are located *below* the figure, and begin with the number in bold (e.g., “**Figure 1.**”). Figures appear immediately after their first reference in the text. The best way to reference a figure in text is parenthetically, for example, “(Fig. 1)”. Do not fit a single figure on more than one page.

Note: I see several errors often regarding figures and tables. Take care with the following instructions:

- a) There are only two ways to provide non-textual information in a document: a figure or a table. No such thing exists as a “plot” or a “graph”. These words are most likely referring to “figures”.
- b) Figures and tables are both numbered sequentially. Only one “Figure 2” should exist in a document. The third figure which appears is referred to as “Figure 3”.
- c) You must reference a figure or a table in the text of the document. Otherwise, what was the point of the figure or table? A figure or table without any reference in the text will confuse the reader and will indicate that the figure or table did not have any purpose for being included.
- d) Make sure that the entries in a figure or table can be read! Do not reduce the size of a figure so far that the symbols cannot be distinguished. If any text or symbols cannot be read, then the figure or table is not serving its purpose.
- e) Do not describe a figure in its legend or a table in its caption only by its number, such as “**Table 1**”. The caption/legend should provide enough information so that the reader can understand what is being depicted.
- f) Take care not to have multiple figure or table names. For example, if you copy a “Table 5” from another source into your document, but you are referring to it as “Table 2”, make sure that the “Table 5” is removed, and make sure the original caption is removed. Similarly, when a figure is prepared in Excel, a Title can be prepared. Then the figure is copied into your document, and another caption is given under the figure. Only one caption is needed. Do not use a title in the Excel file.

B. Grammar/English

More non-native English speakers populate this planet than native English speakers. When communicating with English speakers either in writing or in speech, therefore, you must be very careful to communicate clearly.

1. Do not start a sentence with “This” immediately followed by a verb. The word “This” should refer to a specific and obvious instance of a noun (and is often accompanied by pointing) such as “This dress is the one I wore.” Alone, the word “This” is ambiguous. Instead, start with a strong subject and rearrange sentence.

Incorrect:

This shows that Na⁺ is important for promoting enzyme activity.

Correct:

This sample demonstrates that Na⁺ is important for promoting enzyme activity.
(when the emphasis is on the specific sample and its importance in establishing a conclusion.)

or

The Na⁺ ion is important for promoting enzyme activity.
(when the emphasis is on the conclusion that Na⁺ is important.)

2. Do not start a sentence with “It has been shown that” or similar structures. Usually, these five words can be deleted and what remains is a respectable sentence. More generally, make sure the reader knows what any use of “it” is referencing. Be direct.

Incorrect:

It has been observed that addition of betaine increases succinate production.

Correct:

Addition of 5 mM betaine increases succinate production.

or

5 mM betaine increases succinate production.

Incorrect:

It is likely to be raining next Tuesday.

Correct:

Rain is expected next Tuesday.

3. Avoid the phrase “resulted in” or similar structures. Usually, these two words can be deleted and the verb changed. Be direct.

Incorrect:

Addition of betaine results in an increase in succinate production.

Correct:

Addition of 5 mM betaine increases succinate production.

or

5 mM betaine increases succinate production.

4. The word “data” is currently used as a plural noun. Other words similarly misused plural nouns include “criteria” and “phenomena”. Also, remember that “media” is a plural noun referring to multiple different solutions, typically prepared for the growth of cells. “Medium” is the appropriate word when referring to a specific solution.

Incorrect:

The data in Figure 1 shows that succinate is inhibitory.

Correct:

The data in Figure 1 show that succinate is inhibitory.

5. Avoid unnecessarily complex sentences. This problem is often difficult to detect. Often a sentence can be improved incrementally by focusing on the subject and the main verb of the sentence, and improving each of them. Be direct. In the following sentences the subject and primary verb are underlined.

Poor:

The presence of acetate is likely the cause of growth inhibition.

(comment: Does “The presence is” convey the main point of the sentence?)

Improvements:

The presence of acetate likely caused growth inhibition.

The presence of acetate likely inhibited growth.

Acetate likely inhibited growth.

(comment: The main point of the sentence was probably that acetate inhibited growth.)

6. Do not use an abbreviation without defining the abbreviation. Define abbreviations parenthetically on the first occasion a phrase is used in the text, and thereafter always use the abbreviation. Only use an abbreviation for a technical term which is used three or more times, and avoid unnecessary abbreviations or a large number of abbreviations within a document. If more than five abbreviations must be used within a single document, then in addition to defining the abbreviation, provide an alphabetized glossary at the end of the document.

Example:

Tri-n-octylamine (TOA) is a typical extractant for carboxylic acids.

(henceforth in the document use “TOA”)

Similarly, avoid using an abbreviation as a possessive:

TOA's temperature was 37°C (incorrect)

The temperature of the TOA was 37°C (correct)

7. Avoid idiomatic English. Some idioms are obvious (“*It costs an arm and a leg*”). More often, this problem can be subtle and somewhat difficult to detect for a native English speaker. Consider how your sentence might be interpreted by someone translating the text using Google Translate into their native language. Others might take what you are saying literally!

Awkward:

This report will look into the production of enzymes.

(comment: Does this report have eyes?)

Improved:

The topic of this report is the production of enzymes.

Awkward:

Biotechnology has grabbed the attention of the public.

(comment: Ouch.)

Improved:

The discipline of biotechnology has recently received public attention.

Awkward:

Research has recently been very heavy in the area of cancer treatment.

(comment: How was it weighed?)

Research in the area of cancer treatment has recently exploded.

(comment: Too bad we did not call the bomb squad.)

Cancer treatment has recently become a hot area of research.

(comment: How was the temperature measured?)

Improved:

Research in the area of cancer treatment has recently become more active.

Awkward:

A Rushton impeller can go for \$2,000.

(comment: Are additional expenses incurred for the impeller to stop?)

Improved:

A 6” 304 stainless steel Rushton impeller costs \$2,000.

8. Italicize genus and species names. After the first use of the genus, the abbreviation may be used.

Example

Escherichia coli

E. coli (after first use)

9. Avoid the word “done”. The word should be reserved for describing the completion of food preparation in an oven. In most cases preferred words are “completed”, “finished” or “accomplished”.
10. Avoid the word “utilize”.
11. Please write the correct information in each section (e.g., Introduction, Materials and Methods, Results, Discussion). For example, a description of other work DOES NOT belong in the Materials and Methods nor the Results section.
12. Avoid split infinitives. English has become less formal, and the use of split infinitives is becoming more acceptable. However, using excessive split infinitives can be confusing.

Awkward:

The student agreed to soon complete the assignment.

I promise to thoroughly clean my room.

Improved:

The student agreed to complete the assignment soon.

I promise to clean my room thoroughly.

13. Each paragraph should have a single theme. Ask yourself the question “What is this paragraph about?” Every sentence in that paragraph should address that question. A good approach to try is to write the first sentence of every paragraph as “This paragraph is about ...” (and, after completing the text, go back and change the sentence to a more appropriate sentence!)
14. Use the abbreviations "g" for grams, "L" for liters, "h" for hours, "min" for minutes, "s" for seconds, "mol" for moles. Some journals use “l” for liters, but I prefer “L” because the lower case letter “l” in Times-Roman font appears identical to the number one “1”.
15. Think about what you are writing!

Examples:

There are a number of factors involved in designing a chemical reactor.

(comment: Zero and pi (π) are both common numbers. Would it be reasonable to interpret this sentence to mean that “Zero factors are involved in designing a chemical reactor.”?)

C. References

References should consistently use the same format. I prefer the following:

- M. A. Eiteman, M.J. Chastain (1997). Optimization of the ion-exchange analysis of organic acids from fermentation. *Anal Chim Acta* 338, 69-75.
- S. Hyohak, S. Y. Lee (2006). Production of succinic acid by bacterial fermentation. *Enzyme Microb Technol* 39(3), 352-361.

Note the following:

- Authors' initials are abbreviated first, followed by last name.
- Authors' names are separated by commas, with no "and".
- The date is in parentheses followed by period.
- The article name is not capitalized (except first word), and it has no quotes.
- Any genus/species names are in italics.
- The journal name appears in italics with the appropriate journal abbreviation.
- The journal volume issue and complete pages are provided: volume(issue), pages.