**General Tips**

**TIP 1**

Be concise – choose your words carefully and try to get the point across in the least amount of words.

**TIP 2**

Cite any work that is not yours – Plagiarism is a serious offense that can end your academic career and perhaps lead to legal ramifications that transcend academics, always cite others.

**TIP 3**

Construct sentences and paragraphs logically – you should not throw anything out of the blue at the reader, make sure your sentences transition well between paragraphs.

**TIP 4**

Active voice – generally speaking, active voice is preferred over passive voice. In the methods section, it is difficult to write in active voice without using personal pronouns, refer to the journal or professor to find out if personal pronoun use is acceptable.

**TIP 5**

Label the sections of your paper – The labels have a visual component that helps the reader visually separate between different sections of your paper.

**TIP 6**

If you don’t know, ask questions! Contact the University Writing Center for any additional guidance or to set up an appointment.
Abstract

This section summarizes all major sections of your paper.

The primary goal here is to write a brief summary (250-300 words or less) that tells the reader what your paper is about, the major findings and conclusions, and the implications of the work.

What to Write:

1. **WHAT?** – What is it that you’re doing? (Introduction)
2. **WHY?** – Why should we care what it is you’re doing? (Introduction)
3. **HOW?** – How did you conduct your research? (Methods)
4. **FINDINGS** – What are the major findings that this research concluded? (Results, Discussions, Conclusions)
5. **SO WHAT?** – What are the implications of this research? (Conclusions)

Often, portions of your main draft can be paraphrased and inserted into the abstract. Text in the parentheses represents where you may refer to within your paper to answer these questions.

TIPS

1. Write/edit your abstract last, it is the final piece of the document and relies on your other components to be completed.
2. Abstracts are standalone, which means that any acronyms defined in the body of your paper must be redefined here.
3. References to any tables, figures, and other literature are generally not put in the abstract.
Introduction

This section focuses on introducing your work to the reader.

The goal of the introduction is to set the stage for your reader. You should start off broad and gradually narrow it down to your area of research. For example, if you’re studying how nitrogen concentrations affect water quality of the Tar River, start off by describing what nutrients are, which nutrients affect water quality, and how nitrogen affects water quality generally. Then, narrow your focus down to the Tar River. Finally, discuss your study objectives and hypotheses.

What to Write:

- Depending on your paper, you may not have a background section. Therefore, the introduction acts as the section where you discuss previous research.
- Synthesize previous studies that conducted similar research, a good literature review in the introduction helps improve the discussion section.
- At the end of your introduction, you’ll want to present your study’s goals and objectives and the hypotheses you aim to test.
Hypotheses
Assumption(s) to be tested experimentally.

Hypotheses are generally not a standalone section for most manuscripts. However, some young scientific writers struggle with writing proper hypotheses. Hypotheses have two criteria: 1) FALSIFABLE and 2) TESTABLE. In other words, the meaning of the statement can be inversed and experimentally tested.

What to Write:

There are two types of hypotheses: null and alternative. Depending on your assignment, you may need to write both. The null hypothesis states there is no relationship between treatment groups. The alternative hypothesis states that there is a relationship. For example:

Null Hypothesis
There is no relationship between obesity and number of hours per week exercising.

Alternative Hypothesis
An inverse relationship exists between number of hours per week exercising and obesity.

- Your experiment should test the null hypothesis.
Methodology

This section provides an overview of how you conducted your research. The goal of this section is to summarize your methods used to carry out your experiment in a manner that is concise and coherent. The reader should be able to read your methods and replicate your experiment exactly in the way you conducted it.

What to Write:

- Depending on your discipline, the specifications of this section may vary greatly.
- Mention the specific field and lab equipment using brand name and product name.
- Provide any equations you used to determine specific variables if they are not well known.
- Cite any methods that you used that are not your own original work. Unless they are commonly used methods.
- Discuss the statistical tests you chose to run and justify why you used those tests. For example, if you ran non-parametric statistical tests, why did you use those instead of parametric?

TIPS

1. Method sections can be dry to write at times because it may feel formulaic. Remember writing is a process and the first step is to get it on the page.

2. Avoid using “and then” when “and” OR “then” are more appropriate. For example:

Samples were collected and then run on the total organic carbon machine.

Two problems: You can replace “and then” with and. Also, “total organic carbon machine” should be replaced with a brand name and product name of the equipment used.
Results

This section focuses on presenting your results to the reader.

The goal of this section is to present the data. Unless the section is a mixed Results and Discussion section, you should not interpret the data at all. Simply point out the major results and focus on citing the appropriate tables and figures.

What to Write:

- The data – Do not interpret the data! This means just mentioning the mean + standard deviation, median, or some other descriptive statistic.
- Focus on the big picture – if you have a strong correlation mention your r value, do not spend time discussing outliers or points that deviate from the trend. This is something you would do in the Discussion.
- Cite Figures and Tables in order. Therefore, Figures and Tables must have captions and their caption numbers reflect the order in which they are cited.

TIPS

1. Figure captions go below the Figure, but above the Table.
2. Generally, you won’t cite other research in the Results, if you found similar findings to other studies – great! Save it for the Discussion.
3. Remember: Focus on just the data, present the numbers and briefly what the major trends are.
Discussion

This section puts your results into context of previous studies.

The goal of this section is to put your research in perspective of studies that may have conducted similar research. Additionally, in this section you’ll elaborate on the major trends and discuss outliers or deviations from the trend that may be considered suspect. Essentially, you’re defending your interpretations to the reader.

What to Write:

- Discuss and reiterate your major findings. Focus on the big picture because this will be of the most interest.
- This section focuses heavily on citations of previous research and putting your data in context with that literature. You will want to describe why your results deviated from previous studies or mention how they were similar.

TIPS

1. If you’re researching an area with a solid number of previous studies, conduct an extensive literature review. This will help improve your discussion and will make it easier on you when it comes time to synthesize the research with your findings.
2. Prioritize your discussion to the major findings, there should be a logical progression from major points in the results, to what you’ve discussed, to what you will conclude.
3. Cite your figures and tables where appropriate, this will help the reader to have to think less when you reemphasize the main points of the previously addressed figures.

- Though there is a fine line, some do not want any reemphasis. Do not restate anything verbatim, as this is not a good practice since it drives up your word count.
Conclusion

This section reemphasizes the major findings that your research found and the implications of those findings.

The goal of this section is to wrap-up your paper by discussing what can be concluded upon based on your data. Additionally, you’ll want to discuss the implications of this research, essentially describing why it is important and how these data can improve society, management, health, etc.

What to Write:

- Paraphrase your results and discussions by mentioning what the conclusions of the study were.

- Discuss how these conclusions can affect society.

  For example, if you’re researching pollution, is society taking a risk by not accounting for the health risks by not managing this pollution? Are we losing out economically by regulating this pollutant too heavily.

  End the paper with a strong statement:
  - that confirms to the reader that your study is important.

TIPS

1. Do not copy and paste between sections. While the information and the point of your statements may be similar or the same, it will be much stronger if you paraphrase into a different sentence.

2. Use strong word choice, but do not be overbearing.

3. Do not introduce any new data, citing other studies that may be pertinent to your topic may be worthwhile but it should not be an entirely new topic or line of discussion.
References
This section holds all the literature you cited throughout the development of your paper.

TIP

1. Become familiar with a program like RefWorks or Endnote. ECU has a license with RefWorks so you can use it for free to set up an account and it will help manage your references and can write your citations for you. However, it is up to you to make sure the citations are composed correctly.

Appendices
This section holds any data that was deemed supplemental or not a major focus of research.

TIP

1. If you’re citing something heavily from an Appendix, it generally means you shouldn’t have it in the appendix.