

Like all writing, lab reports are written in response to a specific purpose and situation. Scientific writing centers on explanations and explanatory writing, which typically involve statements of cause and effect; but this type of writing is not always easy. Scientific papers are written to fellow scientists to present and discuss new information and ideas. Lab reports, specifically, are written for professors who are already familiar with the concepts and work, to demonstrate your understanding of the process and significance of the experiment(s).

Format and Organization: IMRaD (Introduction, Methods & Materials, Results, and Discussion)

The genres, and thus the style, of these sections vary. The Introduction and Discussion are written in the form of logical arguments, while the Methods and Results are written in the form of narratives.

Introduction

- Provides the rationale and background of the work, starting with the broad context of the study and leading up to the objective(s)
- Uses topic sentences
- Cites relevant information through paraphrasing or summarizing literature
 - Paragraph(s) should logically flow from General → Specific (Lab Objectives)
 - One way to achieve flow is to use signposts (first, second, however, although)
 - For more information on signposts and transitions, see our *Transitions* handout
- Includes a centrality statement that connects the broad opening information to your specific report
 - Ex: Numerous endocrine-disrupting chemicals (EDCs) are pesticides that do not just target the intended pests but also upset the hormonal balance of humans that are inadvertently exposed to them (Mnif et al. 2011).
 - In the example above, the broader information about EDCs is connected to the author's study on their effect on humans.
- Closes with the experimental objectives and/or hypothesis/es

Materials and Methods

- Specifies what was done
- Written in past tense
 - This can be done by paraphrasing the lab manual's steps and adjusting them to what you did
- Tables and Figures may sometimes be needed in this section
 - Be sure to caption and label these properly, according to the documentation style or assignment guidelines

Results

- Presents findings with the supporting evidence
- Tables and Figures are usually included in this section as evidence of findings
 - Note: a graph is considered a figure (not a table)
- Begins with the most important result if there are several
- Written in the past tense because it is what you have found
- Identifies possible Sources of Error (procedural, measurements, observational, recording, computational, etc.)

Note: It may sometimes be difficult to determine what should be included in the results versus what should be included in the discussion sections. Statements of values or observations typically belong in the results section, while statements that involve comments on cause and effect or interpretation of observations belong in the discussion section.

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Discussion

- Answers the question: What do the results mean?
- Explains how well the data support the hypothesis
- Highlights the main finding(s), briefly describes the sources of error and reliability of the results, discusses the limitations of the study and the impact they may have on the accuracy of the results
- Closes with conclusions about the hypothesis/es and how these relate back to the information included in the Introduction

Title and Abstract

The title of the lab report should be descriptive, specific, and concise. Titles may emphasize the main finding(s) and/or the relevance of the study. Titles often lack verbs (Ex: Comparison of soil arthropod communities in highway median turf and horticultural soil). Ask the instructor if there are any title requirements for your lab report.

The abstract (if needed) is an informative, self-contained synopsis of the report. The abstract briefly covers all sections of the report, but emphasizes the results and conclusions. For more information, see our *Abstract* handout.

Language and Style

- Passive vs. Active voice
 - Scientific writing often uses passive voice to emphasize the action performed rather than the individual performing the action. This rule is not universal, however, and should be clarified with the instructor or other guidelines.
- Point of view
 - Third person is typically used in scientific writing, while first and second person (I, me, my, we, us, our, you, etc.) should be avoided.
- Verb tense
 - Lab reports are mostly written in the present tense, but the past tense may be used when describing methods and/or results, or citing past published work. Remember to clarify with the instructor or assignment guidelines.
- For more information on scientific language and style, see our *Writing in the Sciences* handout.

Final Tips: The Writing Process

- Following a writing process may be helpful in composing a clear, concise, and thorough lab report.
- Outlining or pre-writing before drafting allows you to gather your thoughts and ideas before writing the report in its entirety.
- Composing a first draft and subsequently revising it allows you to revisit the text for conciseness and brevity, without sacrificing clarity.

The information for this handout was compiled from the following sources:

Lobban, C.S., & Scheffter, M. (2017). *Writing undergraduate lab reports: A guide for students*. Cambridge, England: Cambridge

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University Press.

Macdonald, L. (2017, September 12). *Tutoring Lab Reports*. Retrieved from <https://owl.english.purdue.edu/owl/resource/1022/1/>

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