Writing a Scientific Research Report (IMRaD)

What is an IMRaD report?

"IMRaD" format refers to a paper that is structured by four main sections: Introduction, Methods, Results, and Discussion. This format is often used for lab reports as well as for reporting any planned, systematic research in the social sciences, natural sciences, or engineering and computer sciences.

Introduction – Make a case for your research

The introduction explains why this research is important or necessary or important. Begin by describing the problem or situation that motivates the research. Move to discussing the current state of research in the field; then reveal a "gap" or problem in the field. Finally, explain how the present research is a solution to that problem or gap. If the study has hypotheses, they are presented at the end of the introduction.

Methods – What did you do?

The methods section tells readers how you conducted your study. It includes information about your population, sample, methods, and equipment. The "gold standard" of the methods section is that it should enable readers to duplicate your study. Methods sections typically use subheadings; they are written in past tense, and they use a lot of passive voice. This is typically the least read section of an IMRaD report.

Results – What did you find?

In this section, you present your findings. Typically, the Results section contains only the findings, not any explanation of or commentary on the findings (see below). Results sections are usually written in the past tense. Make sure all tables and figures are labeled and numbered separately. Captions go above tables and beneath figures.

Discussion – What does it mean?

In this section, you summarize your main findings, comment on those findings (see below), and connect them to other research. You also discuss limitations of your study, and use these limitations as reasons to suggest additional, future research.

Abstract – Summarize the entire study

The abstract for the report comes at the beginning of the paper, but you should write it after you have drafted the full report. The abstract provides a very short overview of the entire paper, including a sentence or two about the report's purpose and importance, a sentence or two about your methods, a few sentences that present the main findings, and a sentence or two about the implications of your findings. (See our handout on Writing Abstracts.)
Reporting versus Commenting on your Findings

In the Results section, you simply report your findings. In the Discussion section, you comment on them.

Report (Results section)	1. Refer to your table or figure and state the main trend Table 3 shows that Spam Filter A correctly filtered more junk emails than Filter B 2. Support the trend with data Filter A correctly filtered.... The average difference is.... 3. (If needed) Note any additional, secondary trends and support them with data In addition.... Figure 1 also shows.... 4. (If needed) Note any exceptions to your main trends or unexpected outcomes. However....
Comment (Discussion section)	1. (If needed) Provide an explanation A feasible explanation is.... This trend can be explained by.... 2. (If needed) Compare to other research X is consistent with X's finding... In contrast, Y found.... 3. (If needed) Evaluate whether the findings support or contradict a hypothesis 4. State the bottom line: what does the data mean? These findings overall suggest.... These data indicate....

Common problems in IMRaD drafts:
- The Abstract does not provide a clear statement of the main findings.
- The Introduction does not communicate clearly why the research is important.
- The Methods section is not detailed enough or is disorganized.
- The Results section provides comments and explanations instead of simply reporting results.

The material for this handout was drawn from Carnegie Mellon's "Cheatsheet" on IMRAD reports.