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Mineral Processing Final Project Report Guide

MINE 3544: MINERAL PROCESSING LABORATORY

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Contents

Overview

The following guide describes the required formatting, contents, and organization of the Final Project written report, which is part of the course term project. Please familiarize yourself with the formatting and content requires for this report.

Recommended Template

The following sections will be included in the Experimental Proposal Report. A description of each major section follows. In the report, each major section should begin on a new page.

Cover Page

1. **Executive Summary**
2. **Introduction**
3. **Experimental**
4. **Results**
5. **Discussion**
6. **Conclusion and Recommendations**
7. **References (if applicable)**
8. **Appendix (if applicable)**

Section Descriptions

1. Executive Summary

The executive summary should start on the second page of the lab report and be written as a one-paragraph summary of the report, stating the main objective(s), the method(s) to achieve those objectives, the major findings, and the implications of the findings. No information should be included in the executive summary that is not already included in other sections of the lab report. The executive summary is one of the most important parts of a technical report. In most companies, upper management may only have time to read this section. Furthermore, many scientific publishers place strict word limits restricting the length of this section. Your audience must be able to get a general idea of what was done and what was found just from reading the executive summary. Since the executive summary is a distillation of the entire report, it is best written last.

While you should use the term "executive summary" for this report, this term is synonymous with "abstract" and is functionally equivalent to the abstract you may have written for other classes.

To be effective, the executive summary should be less than 300 words in length.

2. Introduction

The introduction should include three parts: (1) background information on the topic of the report, (2) a brief review of the theory and motivation behind the topic of the report, and (3) a concise statement of the objectives. The Introduction serves to "arm the reader" with important background information in order to understand the topic and work. The review should generally try to indicate the importance of the topic to the field of mineral processing. (For example: Why are proper sampling, splitting and sizing methods important in mineral processing? Why do we need to know the Bond Work Index of an ore? etc.) The statement of objectives should be clear, concise and specific (e.g., The objective of this study is to …). The introduction should also clearly describe the organization of the material in the subsequence sections.

The introduction should be between 1 to 2 pages in length.

3. Experimental

The experimental section should include several parts including but not limited to (1) materials, (2) apparatus, (3) experimental procedure, (4) analytical procedures, (5) experimental design, and (6) data analysis. Depending on your stylistic approach, these subsections may be compressed or combined; however, all the appropriate information must be included somewhere in this section.

A description of the materials generally includes the type of sample used, its point of origin, the grade of the sample, the particle size of the sample, any other pertinent characteristics of the sample, and any prior processing or preparation to which the sample was previously subjected. Materials may also include any reagents or other chemicals used in the experiment. The apparatus should include a description of all equipment used in the test work. Schematic diagrams or pictures are a common way to illustrate complex equipment in most technical reports and are therefore expected. Apparatus should be described in general terms, i.e. what they are, what are there features, as opposed to just what they did in the experiment. The experimental procedure section should include a narrative description of the steps followed in performing the experiment, describing what was done in the past tense. The analytical procedures should describe the assay methods that were used to analyze the testing products. The experimental design section should clearly describe the variables that were modified between different test runs as well as the responses that

were measured to produce the results. Lastly, the data analysis section should describe the calculations and equations that were used to convert the raw experimental data into useful results. In some cases, particularly for the materials and apparatus, it may be appropriate to include lists and tables to amplify your description of the experimental work; however, the entire experimental section should still be written in narrative form.

The experimental section should be 3 to 4 pages in length, not including figures and tables.

4. Results

The results section should consist of a simple, objective presentation of the resulting raw data including tables, graphs and relevant sample calculations. You should not discuss the results at this point; however, you do need to briefly describe what is being presented to the reader in this section.

The results section will vary considerably in length depending on the type and quantity of graphical elements such as figures and tables. Usually only one page of supporting narrative is needed.

5. Discussion

The discussion section is a very important part of the lab report since the author explains the meaning of the results in light of the theory that was discussed in class, the textbook, or other reference sources. A proper discussion should not simply state numbers, but should indicate the significance of those numbers. In many cases, comparisons of your results with other values reported in the literature may be appropriate. Because of the nature of experimental work, it is also appropriate to discuss factors affecting your results and sources of error. In all cases, you should quantify your comments (i.e., use specific numbers rather than words such as “big,” “small,” etc.) and support them with specific reference to the figures and tables shown in the results section.

The discussion should be 2 to 3 pages in length, not including any figures and tables.

6. Conclusions & Recommendations

The conclusions and recommendation section should generally include a brief restatement of the objectives, a list of the major findings from the work, and a clear statement regarding the implications and recommendations proceeding from the work. It is often appropriate to present the conclusions as a numbered or bulleted list as to help the reader find the specific conclusions from the work. This section should not introduce new material, but should only summarize what has already been presented and discussed in this section. Keep in mind that this section along with the Executive Summary may be one of the only sections that upper management reads.

The conclusion should be less than 2 pages.

7. References

You may find it necessary to include references in certain sections of your report (i.e., parts of the introduction, experimental and discussion). Use the reference style from the “Technical Papers” portion of Mining Engineering for your in-text citations and for the complete references included in this section. Please note that all figures and tables must be labeled with an appropriate figure or table number and title. Furthermore, any discussion of figures or tables in the text must include a reference to the appropriate figure number.

8. Appendix

Any raw data or other supplemental information that is too cumbersome to include in the report narrative may be added as an appendix. This option should be used sparingly, as an Appendix is not intended as a placeholder for information that is essential to your argument. Nevertheless, you may find it useful in some circumstances.

Other Notes and Hints

1. Overall, the entire report should be 4,000 to 7,000 word in lengths. If your report falls significantly outside this range, you should carefully reconsider what you have presented.

2. With regard to the writing process, you may find that report is much easier to write if it is written out of order with respect to the general outline. One convenient approach is to first analyze the data and determine the general conclusions of the work. You can then formulate the graphics that best lead the reader to that conclusion and write the results, discussion, and conclusions sections concurrently. Next, you can write the experimental section to ensure that all the steps needed to produce the results are covered. The introduction can be written at any time; however, the executive summary should always be written last. This order ensures that you can clearly articulate the major highlights from each part of the work into the executive summary.

3. You may find some discrepancies between the experimental approach that you proposed and the experimental approach that you actually employed. While you can briefly mention the discrepancy (and the reason for the change), your primary focus should be on what was actually performed.