

Short Form (Memo) Report Format CHEN 4860 Chemical Engineering Lab II

Whenever any investigation is conducted, it is essential that a record of the investigation and its findings be completed. While oral communication may suffice in very simple situations, the usual manner of communication is by a written report.

The specific format of the report will vary according to the subject matter and according to the amount of information to be transmitted. The report must be tailored to the needs and desires of the individual or group for which it is written. Laboratory reports must be written as if to a general audience of peers. Do not write this report to the instructor. Assume that the reader will have basic technical background in chemical engineering, but do not assume any specific knowledge of your experiment or the equipment used.

The memo laboratory report is a much briefer version of the regular written laboratory report. It is intended to convey an overview of the experiment and its analysis plus emphasis points (also called "bullets") which explain in narrative form the interpretation of results that you have obtained in your analysis of your experimental data. Consider your lab group as a consulting group doing this work as a contract from an industrial company or government agency. Assume your reader will have previous general technical background in chemical engineering but do not assume specific knowledge of your experiment, the equipment and other details.

Memo Report Specifications

- Use standard 8.5" X 11" white paper.
- Adhere to margins of 1.5" on the left and 1" on the right, top, and bottom.
- Type all lab reports (only the calculations and equations may be neatly hand-written).
- Use a 12 point font for all running text.
- Use a bold-face font no larger than 14 point for all headings.
- Have all lab reports bound at a quick-copy shop with any color spiral cover with front and back protective sheets.

The report is due on the date indicated in the schedule at the beginning of the class in lab period. Late reports are unacceptable and 10 points will be deducted per day late. The report should be typed using a word-processor. Only the calculations section may be neatly hand-written. The appendix may include both hand written and photocopied material.

Format

Each memo report must include the following sections:

- I. Title Page
- II. Lab Report Honesty Statement and percentage contribution by each lab team member
- III. Executive Summary
- IV. Discussion
 1. First Emphasis Point
 2. Second Emphasis Point
 3. Discussion of the Third.....etc.
- V. Key Figures and Tables
- VI. Conclusions
- VII. Appendices

Detailed Specifications

Title Page

The title page should include the name of the experiment, title, the name of each author, identification (CHEN 4860 Lab), semester and year, the dates the experiment was performed and report was submitted.

Lab Report Honesty Statement and Percentage Contribution

Academic honesty and professional integrity are extremely important. Academic dishonesty harms your classmates, your school and those who rely on your work for accurate information. Lack of professional integrity causes enormous harm to society. All students within lab groups should sign the Lab Report Honesty Statement. Below the honesty statement, the percentage contribution of each individual to the total effort should be shown. For example, if each student contributes equally in a three person group, then 33-1/3% should appear next to each person's name. Alternatively, if two individuals in the group did most of the work and one member did not have time to make the equivalent contribution, then the division should be 33 to 50% for each of the primary contributors and 0 to 33% for the lesser contributor. The report cannot be submitted without all the signatures and percentages.

Executive Summary

This section is the one that would be read by the person who is contracting for your work and by that person's supervisor. If you were employed in a company that means the report would be read by your boss and you boss's boss. It is imperative that this section be well written. The Executive Summary should be limited to two pages double spaced. It is important to learn how to be both complete and concise.

The Executive Summary should contain a very brief introduction and background (generally several sentences with an emphasis on the purpose of the study and its importance). Next, briefly tell the reader what experiments were performed and provide a brief word picture of your experimental equipment with reference to the appendix lab prep for details. Most of the executive summary should describe

your experimental results and your analysis. Describe the emphasis points (those highlights that you want your reader to learn from your work). The emphasis points should include all the items included with the Analysis Handout you received for your experiment plus any others you wish to include.

Discussion of Each Emphasis Point

Provide a brief description of each of your experimental results. Discuss the analysis of your results and discuss the results of that analysis. You should include one Emphasis Point for each item in the Analysis Handout provided for your experiment. Combine experimental results together with analysis of these results and comparison with the literature into a single Emphasis Point on that topic.

Key Figures and Tables

Include all key figures and tables you used in your analysis. Tables should be numbered (Arabic numbers) in sequence of their first appearance in the Emphasis Points. Each table should contain a descriptive title. Tables might include experimental data or columns of calculations from a spreadsheet program like Excel. Units must be indicated for each column in the table. Clarity is of utmost importance. Every item should be self explanatory. Make sure all Excel calculations include an explanation of how each item was calculated. Show all sample calculations on the same page as the Excel sheet. All columns, rows and entries should be clearly labeled and described.

Figures-Graphs, drawings and tables should be numbered (Arabic numbers) in sequence of their first appearance in the Emphasis Points. Each figure should contain a descriptive title. Graphs should be easily readable and all experimental data points should be distinguishable with error bars representing the actual experimental variability observed. Graphs should be drawn using French curves (or other drawing aids), straight edges (where you expect the data should be linear) or by computer software. Avoid inflection points (multiple data humps or squiggly curves) unless there is a scientific basis for their presence. Where more than one curve is on a given graph, a legend should be provided so each curve can be clearly distinguished. The dependent variable should be on the left hand vertical ordinate and the independent variable should be on the horizontal axis toward the bottom of the report. The format should be the same as that found in the technical literature, e.g. Perry's, Geankoplis, etc. For example, pump curves have the pump head as the vertical axis and the flow rate as the horizontal axis. Curves obtained from theory and literature (Perry's, etc.) should not show any data points (plot enough points from the literature to adequately describe the data) and draw a line through those points. A single figure containing both experimental curves together with curves or values obtained from the literature is generally the best way to compare your experimental results with literature data. The primary purpose is to use and demonstrate good engineering judgment.

Appendices

- I. Photocopy of your Lab Prep from your notebook with signatures.

- II. Photocopy of original signed and dated data sheets.
- III. Background theory that is not included in the Emphasis Points or in the
- IV. Sample Calculations. Not needed to be included here if all the theory used is already included elsewhere.
- V. Photocopy of Analysis Work Sheets with signatures.