Report Guidelines

Unit Operations Laboratory
Winter 2020

All reports should use principles of good grammar, logical flow in paragraphs, and concise presentation of the message.

A. Proposals

(Email, by team, 1 to 3 paragraphs with a one-page powerpoint attachment, first person)

The email should be concise, explaining what experiments will be performed (e.g., type, number). You may assume that the audience knows about the experimental equipment. The attachment should show the procedure for reducing the data, including key equations, an example calculation, and a plot of expected outcomes. You should also show your plan for use of statistics, if appropriate. The proposal is required before your team can start the experiment.

B. Progress Reports

(Email, Individual, 1 to 3 paragraphs with a one-page powerpoint attachment, first person)

Progress reports are a very common method of communication in industry. Progress reports will be graded for effectiveness and clarity of communication. One email progress report is required during the middle of the time period allotted for experiments in the lab (see the class schedule). The email should be concise, explaining what experiments were performed so far (e.g., type, number). You may assume that the audience knows about the experimental equipment and procedure. The attachment should show the intermediate results. The progress report will be an individual report, practicing individual writing skills.

C. Complete Report

(Printed, 4 to 5 pages, single space, 3rd person)

A. This report will include sections like introduction, experimental procedure, test matrix, results, analysis of results, and conclusion.
B. Both an initial and a revised report are required. The report will be critiqued by classmates, revised, and then graded by the instructor. Team members will assess distribution of points for their own team.
C. The apparatus should be explained in a complete report and the experimental method should be outlined in detail, including a basic flow diagram of the equipment. Do not simply copy the online photos or diagrams.
D. The theory should be explained in a complete report, which may repeat some of the material in the proposal.
E. The results section should be expanded compared to a memo report (see below). The purpose is to clearly show the logic used to arrive at the conclusions. Some form of the raw data should be included, and the narrative should explain how the raw data were analyzed. The reader should be able to understand how the raw data were generated from the apparatus described in the methods section and which equations found in the theory section were used to analyze the data. You will likely need 3-4 or more figures/tables to write the methods section in a complete report. The point is to make sure the reader clearly understands each step in your analysis.

F. Both an initial and a revised report are due for these reports. Please note that the initial report is what the submitting individual considers to be the **final version** of the report, complete in all required sections and polished. It is **NOT** a draft. Each of these reports will be critiqued by two classmates. Your grade for these reports will be based on a revised document.

D. Memo Report

(Printed, 2 to 3 pages, single space, 1st person)

1. Complete and stands on its own (includes purpose, what was done, specific results, conclusions, recommendations).
2. The objective to be met is clearly defined. Remember, your report may go to the boss of your supervisor who does not know the details of the task. Therefore, be specific in details (eg. "A 1-in aluminum rod was evaluated to assess whether the heat transfer will exceed 100 W", not "a rod was evaluated"). State the constraints for which the solution is valid.
3. Provide a brief summary of the experimental method used to obtain the results. Be clear enough that the reader can understand the general experiment.
4. Provide a summary of the results along with any statistical analysis. Write a few comments about the results (e.g. trends, agreement with literature, strange results, …). Do not just include your results without any comments. Usually very little discussion of theory is included (except as needed to explain results, conclusions, or recommendations).
5. State conclusions (with solution constraints- i.e. solution is valid for xx flow rates, etc.) and provide recommendations. The conclusions and recommendations should be based upon your results.
6. Remember that the memo report must have continuity between all sections. This is not a cut-and-paste document. The memo is a document that you would give to a supervisor.
7. Both an initial and a revised report are due for these reports. Please note that the initial report is what the submitting individual considers to be the **final version** of the report, complete in all required sections and polished. It is **NOT** a draft. Each of these reports will be critiqued by two classmates. Your grade for these reports will be based on a revised document.

E. Oral Report

(15 minutes, team, powerpoint only)

1. The oral presentation should be approximately 15 minutes with 2 minutes for questions. The oral presentation content should be similar to the content of the written reports.
2. All team members must give part of the presentation.
3. You can have fun with this, but be professional.
4. Presentations will be made on the last day of class, and take the place of a final exam.
5. See the rubric for the grading scheme.

F. Lab Notebook

(team, daily pdf to TA)

1. This year we will be using an electronic lab notebook. Electronic media is becoming more popular in industry to record lab results. You may use MS Word or OneNote.
2. Clearly note the dates and times of all experimental work. Enter information such that another person can comprehend the notebook entries at a later date. Include names and signatures of team members performing the experimental work after each lab. Don't forget to include your own signature. The notebook should have numbered pages.
3. At the beginning of each project, write a brief description of the project and summarize the project objectives.
4. Include a brief summary of the important details of each experiment that is performed on each lab day. Start a new tab or page for each day.
5. Include all raw data in a clear and easy-to-follow manner. If large amounts of data are stored by computer, list the name and location of important data files that are stored on the computer. Include a brief summary of the key data in those files in your lab notebook. Make sure that all data are appropriately labeled and units are specified.
6. Paste preliminary and final plots of data into the electronic lab notebook.
7. Include pertinent experimental observations and conditions including room temperature and pressure, instrument calibrations, equipment specifications, a rough schematic (if you feel it is helpful), etc.
8. Record calculations performed during the experiment.
9. Note key conclusions at the end of the project.
10. Email a pdf copy of the notes for the day to the TA, who will grade them and make suggestions.

G. Leadership Report

(individual, first person)

1. Give feedback to your team members that includes both positive items and items that can be improved.
2. Make goals based upon the feedback from your teammates that you will work on in later teams.
3. Assess your efforts at achieving the goals you have made previously on other teams. For the first lab experience, you use goals that were set during ChEn 376 (Heat and Mass). For the second and third lab experiences, you will work on the goals made during the first and second labs respectively. The goals you make for the third project will be used in the first lab of ChEn 477 (UO Lab 2).
4. Write s short summary of the feedback from your team members, your personal assessment, and your goals for the next project.

H. Critique of Reports

(individual, first person)

1. You will receive final copies of reports from two peers not on your team for both the memo report and the complete report.
2. You will mark-up a hard-copy of the report you are reading to provide feedback to the peer. You will also grade the report using the grading rubric. Once done, you will write a memo to the peer which summarizes your review. These critiques are an important part of learning how to write well.
3. The critiques will be graded (to ensure adequate effort is placed into the activity) on your assessment of the technical aspects of the report and the writing. Thus, if you let poor experimental work, incorrect analyses, or ineffective writing slide without comment, then you will lose points on the critique. However, if the project is truly well done with few opportunities for constructive criticism, then few comments and corrections would be expected to obtain the maximum number of points.
4. Class attendance and participation in the report grading is mandatory during the entire lab period. (See grading section.)