**Norco High School Chemistry**

**Guidelines for Writing Scientific Laboratory Reports**

The study of science is an attempt to make sense of our natural world. Science includes both the process of scientific inquiry through which knowledge is attained and the knowledge which results from the inquiry. The most effective vehicle by which the process of inquiry can be learned is in the laboratory or field settings where students gain firsthand experience of the inquiry process. Laboratory study has also been shown to be an effective means of acquiring scientific knowledge, particularly for understanding and applying this knowledge. Thus, *study in a laboratory setting is an* *integral and essential part of a science course*.

In addition to your lab activities, it is important that you learn how to write a proper scientific lab summary. *It is not* *similar to writing an essay*. Your reports will be organized and written in the form of a classic scientific science paperconsisting of the following sections in this order:

**Title Page with Abstract**

**Procedure**

**Results**

Each section should be labeled with the heading placed in the left hand margin (except for the title).

1. **Title Page**: Be descriptive and don’t worry if the title seems a little lengthy. One word titles, often appropriate foressays, are seldom adequate for lab reports. Place the title at the top middle of the first page. The title page should also include your name and the names of those in your lab group, your class period, your teacher’s name, and the date of the lab.
2. **Procedure**: You should summarize the procedure in point form creating a step by step description in your own wordsof what you did in the lab. It should begin on the **SECOND** page of your lab report.
3. **Results**: This is a big part of your lab. Results of your labs may take the form of diagrams of what you observe. If theresults include data, you should present them in a table, and a graph when the report so specifies. All diagrams, tables and graphs would be numbered in the order in which they appear in the report. All figures should have figure captions which should clearly explain the diagram, and as a rule should not require reference to the text for explanation. The figure caption should contain magnification and a classification of the organism (if applicable). The diagram should also be completely labeled. Diagrams completed in the lab should be included in your report. Make your diagrams as you perform the lab. *Do not redraw diagrams; it is both invalid and unnecessary.*
4. **Abstract**: There are ***five*** essential components to an abstract:
   * *Background* – Define important concepts, theories or laws being examined.
   * *Statement of purpose* – What were you attempting to do in this lab?
   * *Summary of Procedure* – What methods did you use to complete this investigation? This should be a summary,not a detailed procedure like the one you completed earlier.
   * *Summary of Results* – What happened?Summarizeobservations and results of calculations and graphs.
   * *Significance of Findings* – What important concepts or theories are reinforced by your results? What experimentalerrors or limitations might have negatively influenced your results?

The abstract is written in narrative form. It is NOT a list. Do not use fragmented or partial sentences. Write complete thoughts, as if you are having a conversation with the reader. Remember that the abstract goes on the title page!

**Grading**

Each lab report is worth **20 points**. Lab reports in which the student has plagiarized from an outside source, or from fellow students automatically earns ZERO POINTS for the plagiarized section(s)! Students are expected to work in groups in the lab, but **do their own thinking and writing on their lab reports!** Do not present the argument, “But we worked on it together” if confronted with cheating. If students submit lab reports with identical abstracts, you will receive no credit for the work. The instructor will not make a distinction regarding who did the original writing and who did the copying. In instances of copying, all students involved lose credit. **DO NOT ALLOW OTHER STUDENTS TO COPY YOUR WORK.**

Students who frequently lose points for problems with calculations, sentence structure, punctuation, or spelling are encouraged to have reports proofread by the instructor prior to submitting the lab report for a grade. Your instructor reserves the right to have you re-write your lab report to correct obvious deficiencies prior to grading the report.

*Source:* ***El Diamante High School****, sciencegeek.net*

**Lab Grading Rubric**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Far Below Expectations** | **Below Expectations** |  |  |  | **Meets Expectations** | | |  | **Exceeds Expectations** |  |
|  | **Or Missing** |  |  |  |  |  |  |  |  |  |  |
| **1. Title, Date,** | The lab report fails to meet | The lab report fails to meet one | 1. | | Title is present and is descriptive of the lab. | | | |  |  |  |
| **Student Names,** | more than one of the | of the expectations for this | 2. | | Date is recorded and accurate. | | | |  |  |  |
| **Period Number** | expectations for this section. | section. | 3. | | Student name (first and last) is present, as are the | | | |  |  |  |
|  |  |  |  |  | names of the members of the lab group | | | |  |  |  |
|  |  |  | 4. | | Period number is recorded | | | |  |  |  |
|  | ***Points earned = 0*** | ***Points earned = 1*** |  |  |  | ***Points earned = 2*** | | |  |  |  |
| **2. Abstract** | The Abstract fails to address | The Abstract fails to address any |  | The abstract addresses all FIVE of the expected | | | | |  | The student demonstrates |  |
|  | two or more of the five | ONE of the five expected topics |  | topics, including | | | | |  | exceptional accuracy in |  |
|  | expected topics. |  |  |  | **1.** | *Background* | | |  | thought while connecting |  |
|  | OR |  |  |  | **2.** | *Statement of Purpose* | | |  | the experimental results to |  |
|  | Abstract is missing |  |  |  | **3.** | *Summary of Procedure* | | |  | the theories or laws being |  |
|  |  |  |  |  | **4.** | *Summary of Results* | | |  | examined. |  |
|  |  |  |  |  | **5.** | *Significance of Findings* | | |  |  |  |
|  | ***Points earned = 0*** | ***Points earned = 4*** |  | *Your instructor may ask you to rewrite the abstract* | | | | |  | ***Points earned = 7*** |  |
|  |  |  | *before issuing a grade for the lab report.* | | | |  |  |  |
|  |  |  |  |  | | |  | |  |  |  |
| **3. Procedure** | Procedure is a mostly copied | Procedure is represents a |  | Procedure is a brief summary of each of | | | the steps | |  |  |  |
|  | directly from the lab | summary of the written |  | taken in completing the lab. It is NOT an exhaustive | | | | |  |  |  |
|  | description, with little attempt | procedure in the lab document, |  | description containing minute detail. | | | | |  |  |  |
|  | at brevity. | but it omits important details that |  |  |  |  |  |  |  |  |  |
|  | OR | would be necessary to |  |  |  |  |  |  |  |  |  |
|  | Procedure is missing | successfully repeat the lab. |  |  |  |  |  |  |  |  |  |
|  | ***Points earned = 0*** | ***Points earned = 2*** |  |  |  | ***Points earned = 4*** | | |  |  |  |
| **4. Results** | The Results fail to meet two or | The Results fail to meet one of | 1. | | **ALL** data and observations are neatly organized | | | |  | The student demonstrates |  |
|  | more of the expectations for | the four expectations for this |  |  | (in tables if appropriate), and are easy to interpret. | | | |  | exceptional attention to |  |
|  | this section | section | 2. | | All data is correctly labeled and represents the | | | |  | detail, neatness and |  |
|  | OR |  |  |  | limits of the measuring instruments. | | | |  | accuracy in presenting the |  |
|  | Results section is missing |  | 3. | | The student makes no more than 3 errors in | | | |  | results, This includes |  |
|  |  |  |  |  | graphing, labeling, and calculations. Axes of | | | |  | excellence in drawings, |  |
|  |  |  |  |  | graphs must be labeled with the appropriate scale | | | |  | graphing, and in the |  |
|  |  |  |  |  | and dimensions represented | | | |  | presentation of |  |
|  |  |  | 4. | | At least one complete calculation must be shown | | | |  | experimental data. |  |
|  | ***Points earned = 0*** | ***Points earned = 4*** |  |  | for each type of calculation utilized. | | | |  | ***Points earned = 7*** |  |
|  |  |  |  |  |  | ***Points earned = 6*** | | |  |  |  |
| **5. Neatness and** | The lab report fails to meet | The lab report fails to meet one | 1. | | The lab is legibly written. | | | |  |  |  |
| **Organization** | two or more of the | of the expectations for neatness | 2. | | The lab sections are in correct order. | | | |  |  |  |
|  | expectations for neatness and | and organization. | 3. | | No more than five spelling/grammatical errors | | | |  |  |  |
|  | organization. | ***Points earned = 1*** |  |  |  | ***Points earned = 2*** | | |  |  |  |
|  | ***Points earned = 0*** |  |  |  |  |  |  |  |  |  |  |