Mr. Antinora

Physics

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Information Regarding Notebooks**

You will need **1 “Composition book”** for presenting your research findings and recording your assignments (from hereon called Lab Notebooks). Do the following to the pages in your “Lab

Notebooks” before doing anything else:

Page 1: Create a cover page for your notebooks in ink, colored pencils, or glue in a color printout…anything but pencil (Only pens and/or colored pencils will be used in this book; except when creating a sketch to be colored in). It should be neat and include the following: Name, School Year (2013-Fall Semester), Teacher Name (Antinora), and Period (your period number).

Page 2: (front side of next sheet in book) Title this page: “Table of Contents”. It is here you will be listing you labs/activities and be giving page numbers. So, you will want to neatly add columns like below:

|  |  |  |  |
| --- | --- | --- | --- |
| Lab | Number | Lab Title Page | Grade |

Page 3: (front side of next sheet in book) Leave Blank. This is so if you need more room for table of contents you will have it.

Page 4: (front side of next sheet in book) Pay attention! Here is where you will start numbering EVERY page in your book. You will start with 1 on the front side, 2 on the back side, 3 on next page, 4 on backside, and so on until you reach the very last page. All page numbers are put in the lower right hand corner of the page in ink!

**Composition Book Rules:**

1. Black or blue ink only. Everything must be written in ink. Writing in pencil=zero credit.

2. Only write on the right side pages of the notebooks. The left side will be used to make corrections or to add data later.

3. Keep your table of contents current! Make sure you skip lines in case you have to add a correction on one of those left hand pages and need to add it to your table of contents later.

4. Be as neat and organized as possible. Neatness and readability counts!!!

5. ***Before coming to lab*** to perform an experiment the following should be completed in your lab notebook for each lab experiment:

- **Title and date of experiment**

- **Introduction section**

- **Materials and Method section**

- **Results section**: Data Table(s) should be prepared and ready to be filled in

6. Make sure you include all components requested in the instructions. Double check when you think you are done so that you don’t miss anything.

7. Always use third person

8. Answer in full sentences. Re-phase the question and be as complete as possible. Err on the side of too much information

9. If you make a mistake, cross it out with one line. Do Not use white out. Do Not scribble out. Do Not tear out pages.

10. Portions of lab instructions may be cut out and included in notebook; however, they must be glued or taped in neatly in the appropriate place (no staples!).

11. Diagrams, graphs, charts are important. They may be hand drawn in your book, or you can make up in a program like Excel, print out and paste in your book. You can also print out graph paper for graphs on computer, or make one with a ruler.

12. If you take pictures of your lab investigations, you may also print those out and paste in your book. These often enhance your lab write up!

**Lab Report Format**

Unless told otherwise, use the following format when writing up all lab experiments. ***Each lab report consists of five clearly labeled and easily identified sections written directly into your lab notebook:***

I. Introduction/Purpose

II. Methods (Procedure)

III. Data and Observations

- Present the experimental data and/or observations in ruled data table(s).

IV. Analysis of Results

- Calculations (if applicable)

- Graphs (if applicable)

- Discussion of results

- Answers to assigned questions (if applicable)

V. Conclusion

**Follow the guidelines below for the specific contents for each of the five sections of the lab report:**

Date performed

**Title of Experiment**

**I. Introduction/Purpose**

· Describe the overall goal(s) of the experiment. What is it that you are trying to accomplish/determine with the experiment? This is often called the purpose of the experiment.

· Briefly summarize any relevant background information about the experiment and/or describe the theoretical principles on which the procedure is based, including all relevant chemical equations and/or algebraic equations.

**II. Method/Procedure**

· The "Method" section tells how the work was done. If requested by your instructor, clearly, but **briefly**, describe in a step-by-step fashion the procedure used for the experiment. **Excessive detail is not required**; however a competent student should be able to follow the gist of what you didand understand the purpose of what you did.

**III. Data and Observations**

- Record neatly and directly into a *ruled* data table (i.e. made with a ruler!!) all pertinent measurements that are made during the lab period.

· If a data table is provided with the lab handout or is computer generated, simply cut and paste it with a "glue stick" or tape into your lab notebook. Do not use a stapler, as staples are too bulky and do not hold well.

· If a data table is not included with the lab handout, use a **ruler** to construct a data table in your lab notebook so that all data is shown in an easy to read table. *Pay attention to units and significant* *figures*. ·

· Do not attempt to discuss the interpretation of your data here---this should be done in the “Analysis of Results” section.

**IV. Analysis of Results**

· Include in this section all calculations, graphs, analysis and discussion of your results.

· Show **all** calculations clearly, and with attention to **significant figures** and **units** for those experiments that involve calculations. Explain clearly what you are calculating...Don’t leave it to the reader to figure out what is being calculated!! Examples of each calculation should be provided corresponding to the table that depicts that result. You need only show one sample calculation if that calculation is used repeatedly in the analysis of the data.

· *Graphs must have a descriptive title, and each axis must be labeled with name of the variable and the unit*. Use a ruler! Remember that the controlled or independent variable is placed on the horizontal axis and the dependent variable on the vertical axis. Computer generated graphs from

**LoggerPro**, **Graphical Analysis,** or **Excel** can be pasted into the report.

· If there are **questions** assigned with the lab activity, answer them clearly, but concisely with full sentences **in the notebook**. Number your answers as the questions are numbered and make it clear (rephrase the question) to *anyone* what the question is that you are answering.

· If not addressed in the assigned questions with the lab experiment, analyze your results fully. A full analysis of the results….

- States what conclusions can be drawn from the results and explains how you arrived at these conclusions,

- Uses specific numerical data and/or observations gathered in the experiment to support all conclusions made,

- Will attempt to explain why results might be inconsistent with the predictions you made (what you thought would happen before you did your study, based on a specific hypothesis or other background information),

- Addresses the major sources of error (**Be very specific!**) and explains how these errors affect the results,

- Addresses problems that arose in your study and how they could be avoided in the future,

- Explains what you may have done, if anything, to improve the experiment,

- Compares your results with those of other students/scientists and cites the references used for comparisons,

- Explains any exceptional aspects of your data or unexpected results,

- Examines your results for possible errors or bias, and

- Recommends further work that could augment the results of the study you have presented.

**V. Conclusion**

Briefly, using “*bullets”*, **state your major conclusions as clearly as possible. Use specific supporting examples from your results.** Your conclusion should relate directly to the purpose or goals of the experiment.

**Use your data to support your conclusions!!** It is *not* enough to simply state in the conclusion that you calculated a gene frequency in a population or the rate of enzyme action in a reaction. Always use your data support/substantiate your conclusions!!

**VI. Literature Citation**

Given that some of the information included in your lab write up will have been taken from a published lab activity, you should include a citation of the source. The source(s) used should be cited within your lab write-up (especially in the introduction section) using scientific citation. Example:

(College Board, 2001).

The following citation format will be appropriate for lab reports based on one of the 13 AP Biology labs:

Lab # \_\_\_\_\_ Title of Lab (College Board, 2001)

AP® Biology Lab Manual for Students (2001) New Jersey: College Board. p. \_\_\_-\_\_\_.

**VII. Questions** – The discussion questions found throughout the laboratory should be *written and answered* in this section.

**Lab Write: A great website to guide you in writing formal lab reports**

**http://www.ncsu.edu/labwrite/**

Lab write up Source: BioLEARN http://www.wisc.edu/cbe/biolearn/index.html