Sample Laboratory Report Rubrics

Giving students clear guidelines for what is expected in a lab report or how lab reports are evaluated will make your job of grading much easier. On the next few pages are examples showing a generic laboratory report format that can be adapted to fit your class needs and a disciplinary-specific guideline for a lab report.

GSI Tip: While it may take you additional time up front to create a grading rubric, the time you save when grading is worth the extra effort.

Example #1 – Generic Formal Laboratory Report

(Adapted from Black, Gach, & Kotzian, 1996)

This example provides some general comments that apply to many kinds of laboratory reports. Use this as a template for creating your own checklist or grading rubric to meet your laboratory needs. Note that it represents a score for the organization of the report as well as the inclusion of the correct science content and the mechanics of writing (e.g., style, grammar, spelling).

As a general rule, grading a report like this should include a scale that differentiates between demonstrated levels of performance and provides students with feedback on what they need to do to get better. Try using "Exceeds Expectations" for work that clearly represents a superb performance earning a 100% to 91%, (or an A+ to A grade); "Meets Expectations" for works that meets the assignment requirements, in the 90%-81%, (or the A- to B range); "Towards Expectations" for work that shows an application of developing skills with room for improvement, earning a score in the 80%-70%, (or the B- to C grade range); and finally the "Does Not Meet Expectations" for incomplete, misapplied concepts, or incoherent ideas the signals a performance less than desired and earning a score below 70% (in the D to F range.)

Laboratory Report Guidelines:

Title: The title of an experimental report should indicate the factors being manipulated, the effects or responses being measured, the specific topic or organism under study, and the name of the researcher(s). Be as concise as possible. ___/1

Introduction: The introduction should provide a clear statement of the problem or questions addressed by your study. It should give references to relevant reports by other workers and should include enough background information to make your report understandable as an independent unit. ___/4

Materials and Methods: This section should (1) enable others to judge whether your techniques justify your conclusions, and (2) provide enough information to allow your work to be repeated. Since your protocol was detailed in the lab manual, a short outline or explanation and a formal reference to the lab manual will suffice. Include any deviations from the lab manual protocol. ___/3

Results: Tables and figures, although important, are not enough for this section. Describe your results briefly, but indicate trends in your data that will be discussed in the next section. Tables and figures should be numbered, labeled, and mentioned in the text. The dependent variables should be on the vertical axes and independent variables on the horizontal axes. Linear, semi-log, or log-log graphs should be used where appropriate. ___/4

Discussion: The discussion should include an error analysis (or at least an estimate of uncertainties), any conclusions drawn from your results, and whether your data are consistent with relevant models or hypotheses. ___/4

Summary: The summary should be a shorter version (1-2 paragraphs) of the paper for those who don't want to read it in detail. This section should be independent of the paper. Tell what you did, what happened as a result, and what you concluded. ___/4

Literature Cited: Any facts or ideas that you did not generate yourself must be attributed to the source where you found them (including other people). Indicate such references by inserting the author's (authors') name(s) and the date of publication at the appropriate place in the text and by listing a complete citation under Literature Cited. If any of the analysis was done as a group effort, this should be indicated. All references cited MUST be mentioned in the text. See the lab manual supplement for complete citation format. ___/3

Scientific content: Is the reasoning accurate? Are all possible inferences made? No illogical inferences drawn?___/3

Style, grammar, and spelling ___/4

TOTAL ___/30

Example #2 – 200 Level Biology Class Laboratory Report

(Adapted from Marino, 2009)

This example rubric comes from a field course where students design and carry out their own research project. The laboratory report is a tool for communicating to the GSI what was done by the student and what students learned in relation to the themes of the laboratory course. Note that this rubric also includes prompts for what components students should include in their report for each section and how much each component is worth.

Laboratory Report—10 points possible

Introduction (2 points)

- Background (1 pt): Is context provided for the study?
- Hypothesis (0.5 pt): Is the hypothesis stated clearly, and is it well-justified?
- Predictions (0.5 pt): Are explicit predictions made that follow from the hypothesis?

Results (3 points)

- Graphs, charts, tables (1 pt): Are all relevant figures included? Are figures and axes labeled appropriately? Do they only contain appropriate information? Are the tables redundant with the figures?
- Description in text (1 pt): Does the text adequately describe the results of the study?
- Statistics (1 pt): Are the appropriate statistics included for this study? (e.g., mean, standard deviation, test statistic, p-value)

Discussion (5 points)

- Are the results related back to the hypothesis and predictions? (1 point)
- Is the general biological significance of the study discussed? (0.5 pts)
- Responses to questions in lab handout (1 point per question, 3 questions total)
- Independent thought (0.5 points): Did the student contribute ideas besides those discussed in lab?

Deductions

- Grammar (up to 1 point)
- Conciseness (up to 1 point)
- Cited at least 2 references (0.5 points per reference)

References

Black, B., Gach, M., & Kotzian, N. (1996). *Guidebook for teaching labs for University of Michigan Graduate Student Instructors*. Ann Arbor, MI: Center for Research on Learning and Teaching, University of Michigan.

Marino, J. (2009). *Grading rubric for biology 282*. Ann Arbor, MI: University of Michigan, Ann Arbor.