



## ADVANCED PLACEMENT PHYSICS C

### L9905A : Rubric

created: 2007 1107

revised: 2009 0112

#### COMMON SCORE

Most areas are evaluated for the group as a whole, unless otherwise indicated. It is the responsibility of the group to ensure that all members invest an equitable amount of effort.

#### THIRD QUARTER

Proposal	10
Interview	5
Preliminary Design	15
Literature Search / Preliminary Theory	15
Lab Journal	4 x (3x4)
group meeting presentations	7

The weight of the XLP will be adjusted to be 25% of the 3rd Quarter (distinct from other labs).

#### PROPOSAL (INDIVIDUAL)

10	Excellent proposal that names a reasonable goal and indicates clearly the path to it.
7	∞ Reasonable proposal that names a reasonable goal but is unclear on path, <u>or</u> : ∞ Reasonable proposal that names an overly-ambitious or too timid goal, but is explicit on the scope and manner of work to be pursued.
4	Poor proposal that fails to name a reasonable goal, or fails to give any insight into the scope or manner of the investigation. Clear indications that the group remains unsure, unclear, or uninspired.

A penalty of -1 will be assessed for not typing the proposal.

A penalty of -2 will be assessed for each day the proposal is late.

#### INTERVIEW

5	During the interview, all group members evidence a solid grasp on their topic, proposal, and project.
3	Although the group as a whole seems to have a clear project in mind, one or more members evidence hesitancy or uncertainty or unfamiliarity with the proposal or its subject.
1	The group gives no evidence of having thought through the project

#### GROUP MEETING PRESENTATION

Each group will present at least once to the rest of the class for approximately 15 minutes. This is meant to be an opportunity to assess your progress and to solicit helpful insights from other intelligent people. It is expected that you prepare a sheet or two of handouts for the members of the class. You should define your question, state what approach you intend to take, and flag any issues you've encountered. Getting a 6 or 7 requires showing real data.

## LAB DESIGN

10	Excellent, clear lab design that articulates the process explicitly and lays out a reasonable path (including schedule) for completion.
7	Reasonable lab design that provides a clear process and indicates careful thought has been given. Although hazy on some details and perhaps more contingent than absolutely necessary, the design nonetheless provides a workable skeleton upon which to hang the project.
4	Poor lab design that leaves out too many details, that fails to offer specifics, or that indicates continuing confusion on the part of the group. Too many steps are vague or simply wrong. Too many issues left for future resolution, giving the project the character of a fishing expedition.

## LAB JOURNAL

The lab journal will be checked six (6) times during the course of the project. For each time, I will rate your journal according to the following rubric:

4	The group <b>has advanced noticeably</b> since last check. All outstanding issues and questions have been resolved or superseded. New directions for lab work have been proposed and investigated. Timely work on original goal allows a deepening of the investigation.
3	The group <b>has advanced</b> since the last check. Although not everything planned has been accomplished, reasonable progress has been made. The work done since last check clearly moves the group toward the ultimate objective.
2	The group <b>has stumbled</b> since the last check. Many questions remain unanswered and it is not clear that any work has been addressed toward them. The ultimate goal is no closer than at last check, or is only marginally closer. Some indication of drift or lack of focus.
1	The group <b>has backslid</b> since last check. All previous questions remain and new ones have opened up. The ultimate goal has actually receded, perhaps through indifference, perhaps through hazy thinking. Immediate, decisive action needed to salvage the project.
0	The group has failed to document its work during the period indicated.

## FOURTH QUARTER

Lab Design	10
Lab Journal	$(3 \times \frac{1}{2} \times 4) + (3 \times \frac{3}{2} \times 4) = 24$
Poster - design	5
Poster - questions	5
Lab Report	
Theory	10
Procedure	10
Presentation of data and organization of report	10
Analysis / Error Analysis	10
Conclusion	15
email and paper copy on time	1

The project will be given a weight so as to be 50% of the 4th Quarter.

### POSTER SESSION

10	Excellent poster that captures all the important issues, discoveries, and features of the project. Interaction with questioners indicate a strong grasp of the material and the results.
7	Reasonable poster that includes most of the salient details, thin perhaps on supplementary information or too cluttered or too narrow for general appreciation. Although adequate, the poster fails to express fully the interest and importance of the project.
4	Poor poster that is entirely visual fluff and fails to convey any important ideas. Poor choice of graphics or text obscures rather than illustrates. No background for a new reader, no indication of why anyone should care, no quick statement of important results.

### LAB REPORT

The final lab report will be graded on these areas:

Theory	
10	The theory is concise but clear.
7	The theory is fuzzy on some details.
4	The theory indicates a massive failure to understand the content of the project.

Professionalism	
10	The report has all the hallmarks of a true professional report: The report is typewritten, clear, well-organized, and free of grammatical mistakes. References are cited when appropriate.
7	The report is adequate but betrays some sign of sloppiness, carelessness, or hurriedness. A few minor grammatical errors, or awkward word choices, mar an otherwise professional endeavour.
4	The report is unacceptable from a high school senior at an elite college prep school. It contains numerous and distracting grammatical errors or egregiously awkward phrasing. It is disjointed or disorganized. Transitions are bungled and the prose does not flow from one paragraph to the next in any discernible order. Ill-paced, ill-edited, and ill-executed, the report leads the reader to doubt the abilities of the researchers, much less the quality of their work.

Failure to provide adequate references will reduce this score by three (3) points.

Failure to type the report will reduce this score by two (2) points.

Presentation	
10	The report presents its information clearly and well. Tables and figures are captioned and labeled clearly, and are located in good proximity to the portions of text referencing them. Graphs are clearly labeled and explained, and provide useful information without being too busy. The visual cohesion and impact of the report augment the information transferred to the reader and make the reading a pleasurable experience.
7	The report is reasonably well-presented. Graphs are overly busy or overly sparse, or the interpretation of graphs is left too vague. Tables and figures betray some clumsiness, such as missing units or being far from the text referencing them (or are unlabeled or uncaptioned). <u>Limited exception:</u> It is permissible to group all tables and figures at the end of the report if they are properly labeled and kept in order.
4	The presentation of the report actively distracts the reader or hinders comprehension. Tables and figures are unlabeled, uncaptioned, or appear at essentially random places in the report. Graphs are unlabeled and unexplained, leaving the reader unsure as to their interpretation.

Content	
10	The report provides a concise yet comprehensive overview of the project from conception to completion. The reader is left with no doubt as to the question pursued, the steps taken, or the results obtained. The report completes the project and renders it a logical whole.
7	The report makes clear the main thrust of research and most of the steps taken. It is somewhat unclear or vague on some points but the message, in the whole, gets through. Absence or oversight of one or two areas leaves the reader with the impression that the project is not complete or did not realize its goals.
4	The report is abysmal. Obviously critical areas neglected, ignored, or mishandled. Either no indication of the procedures used, or no statement of results, or both. The reader is left with the impression that research was hardly begun, much less completed in a timely manner.



Abstract	Penalty on the Content score
Abstract is strong: It contains a statement of the problem investigated <u>and</u> results.	0
Abstract speaks only in generalities and does not include specific results.	-2
Abstract is written present-tense.	-2
Abstract is missing	-5

Conclusion	
10	The conclusion makes clear the results of the project and links it to larger issues. Avenues of future research are described in some detail. Sources of error or non-reproducibility are addressed <u>quantitatively</u> .
7	The conclusion is somewhat fuzzy or incomplete. Some indications that the ultimate goal of the project remains unfulfilled or incompletely explored. Sources of error or non-reproducibility are listed but not addressed fully. Nonetheless, it is clear what was learned and what implications it can have.
4	The conclusion is inadequate. The results are muddled, vague, or (worse) incorrect based upon the data presented. Strong indications that the underlying phenomena, as well as the particular instantiation, are misunderstood. No attention is given to error analysis or reproducibility.

**Regardless of other scores**, any of the following will result in a semester grade of not more than 40 for the lab project:

- The failure to maintain an adequate lab journal. “Adequate” in this context means an average lab journal check value no less than 2.
- The failure to submit a lab report.
- The failure to present a poster.