Reports on your Laboratory Activities

You will have three lab reports this semester: Experiment 2 due the week of 3/5; Experiment 3 due the week of 3/19, and your final Honors Cup report due the week of 4/9.

The key questions you need to answer in the reports are:

1. What did you do and why is it important? (purpose)
2. How did you do it? (experimental; Journal style)
3. What happened and how do you know? Are there other interpretations? Is all of the data accounted for? (Usually this is the best section to address specific issues or questions.) (results and discussion)
4. Summarize the bottom line: Make a firm conclusions with recommendation for future use of this approach due to positive results and/or suggestion for alternative exploration. (conclusions)

The reports should be written for your boss in industry. She is a chemist in charge of overseeing all of the synthetic projects and reporting to the company president. She is busy and has very little time to read through the reports, so they need to be as concise as possible. She regards highly solid scientific evidence (spectroscopic analysis of final products including correlations between spectroscopic evidence and structural conclusions; information on both the starting materials and the products.) She also likes to read writing that is structured well: “subject-verb-object with tense agreement,” paragraphs with one basic idea and a thesis sentence, etc.

The chemical process you have carried out may be shared with other chemists in the company, so you need to provide clear, concise experimental details in the style of a chemical journal. Use articles from the Journal of the American Chemical Society or the Journal of Organic Chemistry as your guide.

The text of each Basic Training report should be no longer than 3 pages (this does not include tables, spectra, etc which are all numbered sequentially and titled, again see Journal of the American Chemical Society or the Journal of Organic Chemistry for reference). Include a title page with your name, lab section, and name of the report.

Do not overwrite your reports. Simple exposition in a clear and highly outlined format is easy for your readers. Avoid being too informal and chatty, and also avoid the temptation to lapse into a pseudo-scientific style that is like a parody of some bad movie character. Your format should be thoughtful and clear.

Your GSI will probably have some suggestions for your reports such as their preferences for page numbering, spacing, font, etc.
(A) Physical Presentation and Organization
(5) The report is very organized, clear but fluid separation of topic; correct referencing; well-labeled spectra/figures
(4) In need of minor improvement in organization, referencing; labeling spectra/figures
(3) In need of moderate improvement in organization, referencing; labeling spectra/figures
(2) Report does not follow GSI suggested guidelines
(0) The report is grammatically incorrect; challenging to read; poor organization and integration of tables and figures

Score: _____

(B) Purpose
(8) The report clearly states the purpose of the experiment (both what and why); appropriate length
(6) The report has unclear or inappropriate statement of what OR why
(4) The report has unclear or inappropriate statement of what AND why
(2) The report has no sense of purpose; hard to determine the what and why

Score: _____

(C) Experimental
(12) Experimental are written correctly in content and style; publishable Journal-style experimental text
(10) Experimental complete, but style in need of improvement OR procedure complete in journal style but missing a set of details such as NMR/IR, etc. data that is reported elsewhere.
(8) Experimental complete in journal style but missing minor information OR procedure needs style improvement AND information such as IR/NMR missing but reported elsewhere
(6) Experimental incomplete in a way that is misleading or information missing
(4) Procedures are poorly and incorrectly written

Score: _____

(D) Results and Discussion
(15) a) Results easy to find and interpret; b) problems addressed succinctly and reasonable choice for workup and methods of characterization; c) discussion limited to data in results or cited precedents; d) incorporated spectroscopic interpretation referring to figures and tables; e) answered all questions effectively.
(13) Weak in one the above
(11) Weak in two of the above or one missing
(9) Weak in three of the above or two missing
(7) Weak in four of the above or three missing
(3) Misdirected results and discussion

Score: _____

(E) Spectroscopic Interpretations
(10) Spectroscopic interpretations follow assigned format, complete and accurate, with appropriate assignments
(8) Follows assigned format but missing some peak assignments OR good assignments but wrong format.
(6) Follows assigned format; critical data missing in one or more spectrum OR incorrect assignments
(3) Spectroscopic interpretations are poorly done and unjustified

Score: _____

(F) Conclusions and Recommendations
(10) Solid, substantiated “matter of fact” conclusion drawn; conclusion fits data and discussion; recommendation clear, logical, creative
(8) Conclusion OR recommendation not expressed clearly
(6) Conclusions not substantiated by data OR recommendation not logical, clear or creative
(4) Conclusions not substantiated by data AND recommendation not logical, clear or creative
(2) No further experimentation posed

Score: _____

Total: _____ /60

Late reports (-10% per day) or lack of referencing (-4 pts each offense)

Attendance and Participation

Part of the overall Chemistry 216 Grade is based on GSI observation and assessment of laboratory skills, record-keeping, attendance and engagement in lab tasks: (5) highly engaged, prompt and attentive toward experimentation, (4) good effort, (3) there but more mechanical, (2) towards minimal satisfaction of time and work, (1) unengaged and distracted.

_____ /5