APPENDIX B: SCIENTIFIC PAPER GRADING RUBRIC

Chemistry 335-337
Organic Chemistry Laboratory

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Scientific Paper Rubric

Introduction

Name:_____

General background and theory.

8 7 6	5 4 3	2 1 0
Adequately sets the stage for the specific context and relevance of the experimental aim. Background information and theory are concise and correct.	Inadequately sets the stage for the specific context and relevance of the experimental aim. Background information and theory are somewhat broad/wordy or partly incorrect.	Does not set the stage for the specific context and relevance of the experimental aim. Background information and theory are too broad/wordy and incorrect.

Specific context and relevance.

8 7 6	5 4 3	2 1 0
Describes why the study is important in the context of known literature, naturally leads the reader to the scientific aim. Context is concise and correctly described.	Context is only partly described, organization confuses link between context and scientific aim. Context is incorrectly described in some places or wordy.	Does not describe why the study is important in the context of known literature; does not lead the reader to the scientific aim. Context is incorrectly described and too wordy.

Scientific Aim.

4 3	2	1 0
Clear statement of the scientific aim. Reader is sure of the scientific questions being asked. Aim is understood correctly by the author.	Refers generally to scientific goals without focusing on specific scientific questions. Aim is only partly understood by the author.	Unclear, very general, vague; includes educational objectives. Aim is misunderstood by the author.

Experimental Procedure

Is the description complete and concise?

10 8	6 4	2 0
Procedure contains enough information that it is reproducible (through the text or by appropriate referencing). Procedure conveys only necessary & relevant information.	Procedure is missing some critical information required for fully evaluating or reproducing the experiment. Procedure is wordy in some sections. Contains some unnecessary or irrelevant info.	Procedure is so vague that reader cannot begin to evaluate or reproduce the experiment. Procedure is verbose, and contains large quantities of unnecessary or irrelevant information.

Data/Results

Text.

10 8	6 4	2 0
Text is complete and concise. Data interpretation not included.	Text is wordy or incomplete in some sections.	Text is missing or contains large amounts of incorrect or irrelevant information.

Data choice, data processing, figures.

5 4	3 2	1 0
Contain all data that support or contradict the arguments made in the discussion. Contain no irrelevant or redundant data. Data are processed correctly.	Missing some critical data or contain some irrelevant or redundant data. Data are processed incorrectly in some places.	Missing most critical data or contain a large amount of irrelevant or redundant data. Data are processed incorrectly in most places.

Data/figures presented in a logical, organized, professionally-formatted fashion.

5 4	3 2	1 0
Presentation choice (table, graph, or figure) enhances understanding. Appropriate legends & captions are included; data format is correct.	Presentation confuses understanding of information. Legends & captions are unspecific or difficult to follow. Data format mostly correct.	Presentation choice makes understanding the data impossible. Legends/captions are missing. Data improperly formatted.

Discussion

Is discussion persuasive?

10 8	6 4	2 0
Effectively uses data to address scientific aim. Key data are interpreted correctly. Deeply thought out argument that logically leads to conclusions.	Relationship between data and scientific aim sometimes muddled. Key data are not always interpreted correctly. Uses some unimportant data. Argument is sometimes weak.	Does not effectively use data to address the scientific aim. Key data are interpreted incorrectly. Fails to use the KEY data. Argument is weak or non-existent.

Is discussion complete?

10 8	6 4	2 0
All data & error that support or contradict your conclusions are discussed.	All data & error that support or contradict your conclusions are partially discussed.	Data & error that support or contradict your conclusions are poorly discussed.

Conclusion

Restatement of aim.

2	1	0
Scientific aim is restated clearly without using the same language found in the introduction.	Scientific aim is restated clearly by copy/paste from the introduction.	Scientific aim is not restated clearly.

Summary of key experimental findings.

8 7 6	5 4 3	2 1 0
Summary is clear, concise, complete, and correct.	Summary is unclear, verbose, incomplete, and/or incorrect in a few places.	Summary is unclear, verbose, incomplete, and incorrect in most places.

References

Are references appropriate?

5 4	3 2	1 0
Reference sources are appropriate for a scientific paper. Number and variety of references indicate that author has a high level of understanding of the subject.	Some reference sources are not appropriate for a scientific paper. Number and variety of references indicate that author has a moderate understanding of the subject.	Reference sources are inappropriate for a scientific paper. Small number of references indicates that author has little understanding of the subject.

Are references formatted properly?

5 4	3 2	1 0
References properly cited in text and formatted correctly.	References not properly cited in text or formatted correctly.	References are improperly cited in text and formatted incorrectly.

Overall Writing Style

Is the writing style appropriate for your audience?

5 4	3 2	1 0
Sounds like a professional chemist—clear, concise, and persuasive.	Sounds like a good chemistry student—somewhat clear, concise, and persuasive.	Sounds like a chemistry student new to scientific writing—not clear, concise, or persuasive.

Writing Mechanics

5 4	3 2	1 0
Grammar, punctuation, usage, and spelling enhance paper quality.	A few mechanical errors, but does not distract reader too greatly.	Many mechanical errors severely detract from meaning of paper.