

EVPP 110 Lab - Guide and Grading Rubric for Formal Lab Report - Spring 2019

1/22/19

Guide to the Formal Lab Report:

Students will complete one formal lab report. The report will be based on one activity (experiment) conducted in lab class and completed the week of 2/25/19-3/1/19. The activity upon which the report is based is:

- ***"Molecules and Processes of Life - Activity 6 - Cellular Respiration and the Effects of Pollutants on Its Rate"***

The formal lab report assignment is to introduce students to the style of writing used to present the process and results of scientific experimentation. Students will be prepared for the task by:

- 1) reading the assigned lab activities in the lab manual which are structured in a similar manner to the structure of scientific papers
- 2) completing the "Scientific Paper Tutorial On-Line Assignment"
- 3) listening to the lab instructor's explanations of the expected content and format of the formal lab report and the grading rubric for the assignment
- 4) reading the "Writing a Lab Report" section of the lab manual
- 5) reading and understanding the grading rubric for this assignment (included at the end of this document) **before** writing the lab report
- 6) taking advantage of the individual assistance available from the lab instructor and the learning assistants
- 7) taking advantage of the individual assistance available at the GMU Writing Center (see <https://masononline.gmu.edu/student-resources/writingcenter/>)
- 8) participating in the peer-review process in lab class

Data and observations will be made by the lab group during the execution of the assigned lab activity, but **the formal lab report must be the independent work of each student.** Students will submit their formal lab report electronically via the course Blackboard page. Upon submission to Blackboard, students' lab report will be subjected to a plagiarism review via the SafeAssign program which is incorporated into Blackboard. Students are **not** to copy each other's graphs, figures, tables, illustrations or any written portion of the formal lab report. **Students who engage in this activity will be considered to be in violation of the Honor Code and will be subject to its process and consequences.** Please visit the GMU Office of Academic Integrity website at <https://oai.gmu.edu> to make sure that you understand the Honor Code and the consequences of violating it. **The minimum sanction recommended for a violation of the Honor Code will be a zero on the assignment.**

Students who are repeating this course may incorporate portions of their previous lab report into the current lab report provided that the new data is utilized and all sections are adjusted accordingly. A student who chooses to utilize this approach must keep in mind that plagiarism checking software will be able to compare the current report to reports submitted in the past. In other words, if a student plagiarized portions of their

previously submitted report, it will be detected on the currently submitted report and will still be considered a violation of the Honor Code.

The first version of the formal lab report will be graded via a **peer-review process** conducted during your lab class the week of 3/25/19-3/29/19. **Students must print out and bring to their lab class the week of 3/25/19-3/29/19 TWO hard copies of their formal lab report.** If students arrive at lab class without the hard copies of their lab report they will be permitted to go to an appropriate location on campus to retrieve or print the hard copies **but they will be assessed the normal penalties for being tardy to lab class.** During lab class, each student will grade the formal lab reports of two of their classmates using the grading rubric. This means the each student will have their formal lab report graded by two of their classmates. The purpose of the peer-review process is to 1) provide an incentive for students to scrutinize, evaluate and understand the formal lab report grading rubric prior to their lab instructors using the grading rubric to grade the formal lab report, 2) give students the opportunity to learn from seeing examples of formal lab reports of different qualities, and 3) give students the opportunity to improve their formal lab report based on input from their peers prior to it being submitted for grading by the lab instructor.

The grades that students receive on their formal lab report from their peers **WILL NOT COUNT** TOWARD THEIR FINAL GRADE ON THE FORMAL LAB REPORT! HOWEVER, THE PEER REVIEW PROCESS WILL BE THE ONLY OPPORTUNITY STUDENTS WILL HAVE TO RECEIVE FEEDBACK ON THE REPORT PRIOR TO IT BEING SUBMITTED FOR GRADING BY THEIR LAB INSTRUCTOR. The purpose of the grades received from one's peers is to give students a sense of the grade they might receive from the lab instructor grading the lab report with the same grading rubric used by the peers. **Participating in the peer-review process will be worth 12 points of the 300 possible lab points, or 4%.** Full credit for the peer-review process will be given for a student who is present on the day of peer-review, brings two hard-copies of their formal lab report, and reviews and grades (using the grading rubric) the formal lab reports of two peers in a thoughtful, thorough, conscientious manner. Fully-participating students will leave their lab class the week of 3/25/19-3/29/19 with two peer-graded copies of their formal lab report.

Students will have two weeks to revise their formal lab report, incorporating as appropriate the comments received and corrections suggested in the peer-review process. Students must **submit to the folder for their lab section an electronic copy of the formal lab report, in the form of a .doc or .docx document, to the lab portion of the course Blackboard page by the beginning of their lab class during the week of 4/8/19-4/12/19.** **NO LATE SUBMISSIONS OF THE FORMAL LAB REPORT WILL BE ACCEPTED.** It is NOT acceptable to email your lab instructor the electronic version of your formal lab report instead of submitting it to the submission folder. It is your responsibility to submit your formal lab report to the submission folder successfully by the due time and date. This means you are responsible for making sure that there are no technical difficulties that will prevent you from submitting your formal lab report in a timely manner. This may mean that you should plan on submitting the

formal lab report prior to the due date/time so that if a technical difficulty arises you will have time to resolve it and still submit your formal lab report in on time.

The formal lab report submitted by the beginning of each student's lab class the week of 4/8/19-4/12/19 will be **GRADED EXTREMELY STRICTLY!!!!** If students have given due diligence to this assignment, participated fully in the peer-review process, and taken advantage of all resources available to assist in executing this assignment, then their grade should be satisfactory. Lab instructors will be grading the formal lab report based on the grading rubric and utilized in the peer-review process. It is the student's responsibility to understand the provisions of the grading rubric.

Lab instructors will **complete the grading of the formal lab report** electronically by **the beginning of each student's lab class during the week of 4/29/19-5/3/19**. The instructor-graded submission will be graded using the same grading rubric used to grade the original paper during the peer-review process. The grade for the formal lab report that is posted in the Blackboard gradebook will be a percentage grade. The final grade for the **formal lab report will be worth 57.25 of the 300 points for lab, or 19.08% of the lab grade**.

If a student does not participate in the formal lab report peer-review process (or is absent from lab on the day the process is conducted), they will receive a grade of 0 for the peer-review process. They can submit the formal lab report but they will not have the opportunity to receive feedback prior to the submission.

Format and Content Requirements

The following sections are **required**. Format and content requirements are **summarized** below. Please refer to "writing a lab report" in the lab manual **and** the grading rubric for additional detail.

- **General content and format information**
 - Font: Times New Roman
 - Font size: 12 point
 - Tense: Past
 - Person: Not 1st
 - Margins: top and bottom = 1"; left and right sides = 1.25"
 - Writing style: Scientific
 - Sentence structure: Extremely well-developed
 - Grammar, punctuation, spelling: No more than two insignificant errors (meaning the errors do not detract from the message or interfere with reader's comprehension)
 - Minimum length: There is no minimum length for the lab report. The goal is to say everything that must be and should be said as concisely as possible.
 - Section headings: Should be centered on the page before the beginning of each section. New sections do not need to begin on a new page, except that the abstract and literature cited sections will begin on new pages.

- **Section-based content and format information**

- Title

- Content: Title must be thoroughly descriptive of the experiment (not the assignment)
 - Format: Title should appear on a cover page with title mid-way down the page, centered. At the bottom of the cover page, centered, student's name should appear on its own line, followed on the next line by the name of the instructor (centered), followed on the next line by the lab section number (centered), followed on the next line by the date of submission.

- Abstract:

- Content: A "miniature" version of the lab report that will contain enough information about the experiment for the reader to decide whether or not they should read the entire paper. All information should be presented in the same order in which it will be encountered in the lab report.
 - Format: Abstract will be on a page to itself following the title page and will be single-spaced.

- Introduction:

- Content: The problem or issue being studied must be described. Background information on this problem/issue must be provided. This requires doing some research into the problem/issue and providing a summary of the key information. This background information should also familiarize the reader with the topic. The source of the background information must be cited in the body of the introduction section. For this report, students must cite literature from three sources in their introduction section. This section must include a statement of the hypotheses, a description of the main objectives of the experiment, and a brief explanation of the experimental design. The following five general questions must be addressed/answered in the introduction section:
 - *what is the basic biology of the issue you are studying*
 - *why is it important*
 - *can it be disrupted by pollutants*
 - *what types of pollutants are known to adversely affect it and why*
 - *what are the consequences to organisms, ecosystems, the environment of a disruption of biological process by a pollutant(s)*
 - Format: Will begin on its own page following the abstract. In-text literature citations will be in APA format.

- Methods:
 - Content: This section should contain an explanation of the procedures that were carried out in the experiment in sufficient detail that someone reading the methods could repeat the experiment, if desired. The materials used are not listed but are mentioned only in the context of the description of their use. Include a description of what data will be collected, when in the experiment it will be collected and how it will be analyzed.
 - Format: Must be in paragraph form with no bulleted or numbered lists. This section does not have to begin on its own page.
- Results:
 - Content: All main findings of the experiment, supported by key pieces of data, should be described in paragraph form. There must be no interpretation of data in this section. All data must be summarized in at least one table or figure. Tables and or figures must be labeled and numbered sequentially followed by a descriptive title. This label/title is placed above tables and below figures. Graphs in figures must have labels that identify the parameter and units involved. All tables/figures must be referenced in the paragraph portion of the section by the table/figure number.
 - Format: This section must not begin with a table or figure. It does not have to begin on its own page.
- Discussion:
 - Content: Restate the hypotheses. Do not include any results not mentioned in the results section. Interpret all data by explaining how the results link to basic scientific concepts and how they link to the findings of other researchers. Address other issues including sources of uncertainty in the experiment, further investigations that could/should be done to gather more information, suggestions for improving the experiment, and an alternative explanation for positive or negative results. State whether or not the data supported the hypothesis and the conclusions that can be drawn from the results.
 - Format: This section does not have to begin on its own page.
- Literature Cited:
 - Content: The sources for all citations contains in the report must be listed, in alphabetical order by author, using the APA format. A minimum of three peer-reviewed sources must be used and the lab manual does not count as one of those.
 - Format: Use the APA format. Within a source use single-spacing and a 0.5" hanging indent and between sources use double-spacing.

Formal Lab Report Project Timeline

Date	Project Component
2/25/19 - 3/1/19	Pre-lab lecture includes information about the writing of the lab report
2/25/19 - 3/1/19	Completion of <i>"Molecules and Processes of Life - Activity 6 - Cellular Respiration and the Effects of Pollutants on Its Rate"</i> which is the experiment that is the basis for the formal lab report
3/3/19, 11:59pm	"Scientific Paper On-Line Tutorial" assignment - Due for everyone by 11:59pm on 3/3/19
3/25/19 - 3/29/19	Peer-review process occurs during lab class
4/8/19 - 4/12/19	Electronic submission of lab report due by beginning of lab class
4/29/19 - 5/3/19	Lab instructors complete the grading of the lab report

Grading Rubric for the Formal Lab Report:

The following grading rubric will be used by students during the peer-review process and by lab instructors when grading the formal lab report. Before submitting your report, you should "grade" your report for yourself using this rubric. This will enable you to identify whether or not you have included all the required components of the report and take corrective actions prior to submission.

% of Total	Section				
Title = 1					
	1 = Title is present and all of the following conditions met 1) title is thoroughly descriptive of the experiment (for example, "Effect of Rain Quantity and Frequency on Oak Tree Seedling Growth"), 2) title located on a title page, 3) title page in correct format	0.75 = Title is present and thoroughly descriptive of experiment (for example, "Effect of Rain on Tree Growth") and <u>at least</u> of the following conditions are present: 1) title not on a title page, 2) title page not in correct format	0.5 = Title is present but <u>not</u> thoroughly descriptive of experiment (for example, "Effect of Rain on Tree Growth") and <u>at least</u> of the following conditions are present: 1) title not on a title page, 2) title page not in correct format	0.25 = Title is present but not thoroughly descriptive of experiment (for example, "Effect of Rain on Tree Growth") and <u>both</u> of the following conditions are present: 1) title not on a title page, 2) title page not in correct format	0 = No title present
	Title Section Total				
Abstract = 3					
	0.5 = Summarizes main concepts of <u>every</u> section of the report	0.25 = Summarizes main concepts of <u>some</u> sections of the report		0= No main concepts summarized, or abstract not present	
	0.5 = Information is presented in the same order as the sections of the report are supposed to be arranged		0.25 = Information is presented in an order that is different from the order in which the report sections are supposed to occur		0= Information order is irrelevant since abstract not present
	0.5 = Length of abstract <1 page, single-spaced	0.35 = Length of abstract is < 1 page, double-spaced	0.25 = Length of abstract is >1 page, single-spaced, or <1 page double-spaced		0= Length is irrelevant since abstract not present
	1.5 = Quality of abstract would be described as "excellent"	1.25 = Quality of abstract would be described as "above average"	1.0 = Quality of abstract would be described as "average"	0.75 = Quality of abstract would be described as "below average"	0= Quality absent since abstract not present
	Abstract Section Total				

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% of Total	Section						
Introduction = 20							
Introduction should address the following questions: 1) what is the basic biology of the issue you are studying, 2) why is it important, 3) can it be disrupted by pollutants, 4) what types of pollutants are known to adversely affect it and why, 5) what are the consequences to organisms, ecosystems, the environment of a disruption of biological process by a pollutant(s)							
	8 = Provides a general review of peer-reviewed literature relevant to the experiment, addressing all five of the questions	6 = Provides a general review of peer-reviewed literature relevant to the experiment, addressing four of the five questions	4.5 = Provides a general review of peer-reviewed literature relevant to the experiment, addressing three of the five questions	3.0 = Provides a general review of peer-reviewed literature relevant to the experiment, addressing two of the five questions	1.5 = Provides a general review of peer-reviewed literature relevant to the experiment, addressing one of the five questions	0 = No review of peer-reviewed literature included	
	1.5 = Contains three or more in-text literature citations from peer-reviewed sources, in APA format	1.25 = Contains three or more in-text literature citations but they are either not from peer-reviewed sources OR are not in APA format	1.0 = Contains two in-text literature citations from peer-reviewed sources, in APA format	0.75 = Contains two in-text literature citations but they are either <u>not</u> from peer-reviewed sources OR are not in APA format	0.5 = Contains one in-text literature citation from a peer-reviewed source, in APA format	0.25 = Contains one in-text literature citation but it is either <u>not</u> from a peer-reviewed source OR is not in APA format	0 = No in-text literature citations included
	1.5 = Describes main objectives of experiment thoroughly and in a logical order		1.0 = Describes main objectives of experiment incompletely but in a logical order		0.5 = Describes main objectives of experiment incompletely <u>and</u> in a non-logical order		0 = Main objectives of experiment not described
	3.0 = All hypotheses stated in the proper format	2.25 = All hypotheses stated but incorrect format used	1.5 = One or more hypotheses not included but those included were in proper format		0.75 = One or more hypotheses not included and those included were in incorrect format		0 = No hypotheses stated
	1.5 = Experimental design briefly explained		0.75 = Experimental design explanation too extensive OR insufficient			0 = No experimental design description provided	
	4.5 = Quality of introduction described as "excellent"	3.5 = Quality of introduction described as "above average"		2.5 = Quality of introduction described as "average"		1.5 = Quality of introduction described as "below average"	0 = Quality absent since introduction not present
	Introduction Section Total						

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% of Total	Section				
Methods = 13					
	6 = Concise, easy-to-follow description of materials and procedures provided in enough detail for experiment to be repeated, ALL in paragraph form	4.2 = Concise, easy-to-follow description of materials and procedures provided in enough detail for experiment to be repeated, but all or some was provided in bulleted or numbered format	3.0 = Description of materials and procedures was either not concise and easy to follow OR lacked sufficient detail for experiment to be repeated, in paragraph form	1.8 = Description of materials and procedures was either not concise and easy to follow OR lacked sufficient detail for experiment to be repeated, but all or some was in bulleted or numbered format	0 = No description of materials and procedures provided
	2 = Specifically described what data would be collected and when in the experiment it would be collected		1 = Did not completely describe the data that would be collected OR did not adequately describe when in the experiment it would be collected		0 = No description of the data that would be collected or when it would be collected was provided
	2 = Describes how all data will be analyzed		1 = Describes how some data will be analyzed		0 = No description of how data will be analyzed provided
	3.0 = Quality of introduction described as "excellent"	2.25 = Quality of introduction described as "above average"	1.5 = Quality of introduction described as "average"	0.75 = Quality of introduction described as "below average"	0 = Quality absent since introduction not present
	Methods Section Total				

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% of Total	Section					
Results = 19						
	6 = Describes all main findings of experiment and cites all key pieces of data, in paragraph form	5 = Describes at least $\frac{1}{2}$ of main findings of experiment and cites at least $\frac{1}{2}$ of key pieces of data, in paragraph form	4 = Describes all main findings of experiment and cites all key pieces of data, in non-paragraph form	3 = Describes $<\frac{1}{2}$ of main findings of experiment and cites $<\frac{1}{2}$ of key pieces of data, in paragraph form	2 = Describes $<\frac{1}{2}$ of main findings of experiment and cites $<\frac{1}{2}$ of the key pieces of data, in non-paragraph form	0 = Main findings of experiment were not described and no key pieces of data were cited
	3 = All data summarized in at least one table/figure (T/F), multiples arranged logically and numbered sequentially by type, section does not begin with T/F, all T/F are referenced by their number within paragraph portion of section	2.4 = All data summarized in at least one table or figure (T/F), multiples arranged logically and numbered sequentially by type, section does not begin with T/F, all T/F are referenced in paragraph portion of section but not by their T/F number	1.8 = All data summarized in at least one table or figure (T/F), and no more than two of following conditions present: not arranged logically, not numbered sequentially by type, section began with T/F, T/F not referenced at all in paragraph portion of section	1.2 = <u>Part</u> of data summarized in at least one table or figure (T/F), multiples are arranged logically and numbered sequentially by type, section does not begin with T/F, all T/F are referenced by their number within paragraph portion of section	0.6 = <u>Part</u> of data summarized in at least one table or figure (T/F), and more than two of following conditions present: not arranged logically, not numbered sequentially by type, section began with T/F, T/F not referenced at all in paragraph portion of section	0 = No data summarized in a table or figure
	4 = Table/figure format : Each <u>table</u> has <u>above</u> it a descriptive title that begins with "Table" followed by its number; each <u>figure</u> has <u>below</u> it a descriptive title that begins with "Figure" followed by its number; tables contain units in their row/column headings as appropriate; figures have on both axes labels, units and values	3.6 = Table/figure format : No more than one of the following conditions present: title absent; title not descriptive; title in wrong place; title doesn't begin with "Table...;" or "Figure..."; units absent in tables; axis labels missing, axis units missing, axis values missing	2.8 = Table/figure format : More than one but no more than three of the following conditions present: title absent; title not descriptive; title in wrong place; title doesn't begin with "Table...;" or "Figure..."; units absent in tables; axis labels missing, axis units missing, axis values missing	2 = Table/figure format : More than three no more than five of the following conditions present: title absent; title not descriptive; title in wrong place; title doesn't begin with "Table...;" or "Figure..."; units absent in tables; axis labels missing, axis units missing, axis values missing	1.2 = Table/figure format : More than five but not more than seven of following conditions present: title absent; title not descriptive; title in wrong place; title doesn't begin with "Table...;" or "Figure..."; units absent in tables; axis labels missing, axis units missing, axis values missing	0.5 = Table/figure format : More than seven of following conditions present: title absent; title not descriptive; title in wrong place; title doesn't begin with "Table...;" or "Figure..."; units absent in tables; axis labels missing, axis units missing, axis values missing
	3 = No data interpretation		2 = Less than two sentences devoted to data interpretation		1 = Three to five sentences devoted to data interpretation	
	0 = More than five sentences devoted to data interpretation					
	3 = Quality of section described as "excellent"	2.25 = Quality of section described as "above average"	1.5 = Quality of section described as "average"	0.75 = Quality of section described as "below average"	0 = Quality absent since section not present	
	Results Section Total					

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% of Total		Section							
Discussion = 28									
	3 = All hypotheses re-stated in the proper format		2.25 = All hypotheses re-stated but incorrect format used		1.5 = One or more hypotheses not re-stated but those re-stated were in proper format		0.75 = One or more hypotheses not re-stated and those re-stated were in incorrect format		0 = No hypotheses re-stated
	3 = No new results were introduced here and no incidences of the reiteration of results being presented as interpretation of results		2.5 = No new results introduced here but at least one incident of the reiteration of results being presented as interpretation of results		1.5 = Two new results introduced here and/or two incidences of the reiteration of results being presented as interpretation of results		0.75 = >1<3 new results introduced here and/or >1<3 incidences of the reiteration of results being presented as interpretation of results		0 = >3 new results introduced here and/or >3 incidences of reiteration of results being presented as interpretation of results
	9 =All data interpreted (in same order in which results were presented), by explaining how findings link to basic scientific concepts of the experiment and how they link to findings of other researchers	7.5 =At least $\frac{3}{4}$ of data interpreted (in same order in which results were presented), by explaining how findings link to basic scientific concepts of the experiment and how they link to findings of other researchers	6.5 =At least $\frac{3}{4}$ of data interpreted and at least one of the following conditions were present: interpretation was not in same order in which results were presented; no explanation of how findings link to basic scientific concepts of the experiment; no explanation of how findings link to those of other researchers	5.5 =At least $\frac{3}{4}$ of data interpreted and more than one of the following conditions were present: interpretation was not in same order in which results were presented; no explanation of how findings link to basic scientific concepts of the experiment; no explanation of how findings link to those of other researchers	4.5 = $<\frac{3}{4}>\frac{1}{2}$ of data interpreted an at least one of the following conditions were present: interpretation was not in same order in which results were presented; no explanation of how findings link to basic scientific concepts of the experiment; no explanation of how findings link to those of other researchers	3.0 = $<\frac{3}{4}>\frac{1}{2}$ of data interpreted an more than one of the following conditions were present: interpretation was not in same order in which results were presented; no explanation of how findings link to basic scientific concepts of the experiment; no explanation of how findings link to those of other researchers	1.5 = $<\frac{1}{2}$ of data interpreted and one or more of the following conditions were present: interpretation was not in same order in which results were presented; no explanation of how findings link to basic scientific concepts of the experiment; no explanation of how findings link to those of other researchers	0 = No data interpreted in context of explaining how findings relate to scientific concepts of the experiment and/or how findings relate to those of other researchers	

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% of Total	Section						
Discussion = 28 - continued from previous page							
	5 = Addresses other issues , including all of the following: sources of uncertainty that may have led to unclear results; further investigations that could/should be done to gather more information; suggestions for improving current experiment; alternative explanation for positive or negative result	3.75 = Addresses other issues , including 2 of the following 3: sources of uncertainty that may have led to unclear results; further investigations that could/should be done to gather more information; suggestions for improving current experiment; alternative explanation for positive or negative result	1.75 = Addresses other issues , including 1 of the following 3: sources of uncertainty that may have led to unclear results; further investigations that could/should be done to gather more information; suggestions for improving current experiment; alternative explanation for positive or negative result	0.75 = Addresses other issues , but none of the following were included: sources of uncertainty that may have led to unclear results; further investigations that could/should be done to gather more information; suggestions for improving current experiment; alternative explanation for positive or negative result	0 = Did not address other issues at all		
	1.5 = States whether or not the data supports all hypotheses and why/how	1 = States whether or not the data supports all hypotheses, but does not address why/how	0.75 = States whether or not the data supports some hypotheses and why/how	0.5 = States whether or not the data supports some hypotheses, but does not address why/how	0 = Does not address whether or not the data supports the hypotheses or why/how		
	1.5 = All conclusions that could be drawn from results were clearly stated	1 = All conclusions that could be drawn from results were stated, but not clearly	0.75 = Some conclusions that could be drawn from results clearly stated	0.5 = Some conclusions that could be drawn from results were stated, but not clearly	0 = No conclusions were stated		
	5 = Quality of section described as "excellent"	4 = Quality of section described as "above average"	3 = Quality of section described as "average"	2 = Quality of section described as "below average"	1 = Quality of section described as "poor"	0 = Quality absent since section not present	
	Discussion Section Total						
Literature Cited = 3							
	1.5 = Lists at least three sources (not including lab manual) in APA format	1.25 = Lists at least three sources (not including lab manual) but not in APA format	1.0 = Lists two sources (not including lab manual) in APA format	0.75 = Lists two sources (not including lab manual) but not in APA format	0.5 = Lists one source (not including lab manual) in APA format	0.25 = Lists one source (not including lab manual) but not in APA format	0 = No sources listed
	1.5 = All listed sources are cited in body of report in proper format and all in-text citations are listed	1.0 = Only two of listed sources are cited in body of report in proper format and/or one in-text citation not included in list	0.5 = Only one of listed sources cited in body of report in proper and/or two in-text citations are not included in list		0 = No in-text citations of listed sources and/or all in-text citations absent from list		
	Literature Cited Section Total						

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% of Total	Section			
General = 13				
	3 = Writing style: All of the following conditions met; written in scientific style; correct tense (past) and person (not 1 st) used throughout	2 = Writing style: One of the following conditions not met; written in scientific style; correct tense (past) and person (not 1 st) used throughout	1 = Writing style: Two of the following conditions not met; written in scientific style; correct tense (past) and person (not 1 st) used throughout	0 = Writing style: None of the following conditions not met; written in scientific style; correct tense (past) and person (not 1 st) used throughout
	1 = All required sections are present and each has the appropriate section heading	0.75 = All required sections are present and no more than one appropriate section heading missing	0.35 = At least one required section is missing, or two or more appropriate section headings missing	0 = Two or more required sections are missing, or three or more appropriate section headings missing
	3 = Sentence structure: Sentences 1) are extremely well developed sentences, 2) express ideas clearly, 3) are concise, and 4) flow well.	2 = Sentence structure: Most sentences 1) are extremely well developed sentences, 2) express ideas clearly, 3) are concise, and 4) flow well.	1 = Sentence structure: Less than $\frac{1}{2}$ of sentences 1) are extremely well developed sentences, 2) express ideas clearly, 3) are concise, and 4) flow well.	0 = Sentence structure: Sentences don't express ideas well and are poorly developed; sentence structure is sometimes so poor that it makes reading and understanding difficult; sentences would sound strange if read out loud.
	4 = Grammar, punctuation, spelling: Writing is nearly error free. No more than two insignificant errors (doesn't interfere with comprehension or distract from message) in entire paper and no significant errors that interfere with comprehension or distracts from message	2.5 = Grammar, punctuation, spelling: Writing contains <3 insignificant errors (doesn't interfere with comprehension or distract from message) per page and no more than one significant errors that interfere with comprehension or distracts from message.	1 = Grammar, punctuation, spelling: Writing contains >3 <5 insignificant errors (doesn't interfere with comprehension or distract from message) per page, and/or more than one significant error that interferes with comprehension or distracts from message	0 = Grammar, punctuation, spelling: Writing contains >5 insignificant errors (doesn't interfere with comprehension or distract from message) per page, and/or more than two significant errors that interfere with comprehension or distracts from message
	2 = Format: All of the following condition met: typed in Times New Roman font with size of 12 point, double-spaced (except abstract)	1.25 = Format: Incorrect font style or point size used, but still double-spaced (except abstract)	0.5 = Format: typed in Times New Roman font with size of 12 point, but not double-spaced (except abstract)	0 = Format: Incorrect font style and point size used and single-spaced throughout
	General Section Total			
	Total (100 possible)			