

BIOL 4430 Scoring Rubric

Outcome 1 – Graduate Understands biological, Chemical and Physical principles as they relate to the living world.			
Objective	High	Medium	Low
<i>Graduate integrates scientific principles, identifies systematic relationships and demonstrates proficiency in analyzing cellular energetics genetics and chemical applications.</i>	Achieves a 3.5 or greater GPA in all their science course work.	Achieves a 3.0 GPA in all their science course work	Achieves a 2.5 GPA in all their science course work.
GPA			

Outcome 2 – Graduate will have developed independent research skills			
Objective	High	Medium	Low
<i>Graduate integrates all science disciplines in laboratory exercises .</i>	Achieves a 3.5 or greater GPA in all their laboratory work	Achieves a 3.0 GPA in all their laboratory work.	Achieves a 2.5 GPA in all their laboratory work.
<i>Graduate uses the scientific method in laboratory experiments.</i>	Achieves a 3.5 or greater GPA in all their laboratory work	Achieves a 3.0 GPA in all their laboratory work.	Achieves a 2.5 GPA in all their laboratory work.
<i>Graduate applies the scientific method in developing a research project.</i>	Achieves a 3.5 or greater GPA in CHEM 2111 and BIOL 4400.	Achieves a 3.0 GPA in CHEM 2111 and BIOL 4400.	. Achieves a 2.5 GPA in CHEM 2111 and BIOL 4400.
<i>Graduate demonstrates competency with laboratory techniques and standard laboratory practice</i>	Achieves a 3.5 or greater GPA in CHEM 3101, 3081,	.Achieves a 3.0 GPA in CHEM 3101, and 3081.	Achieves a 2.5 GPA in CHEM 3101, and 3081.
GPA			

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Outcome 3 – Graduate will demonstrate scientific communication skills			
Objective	High	Medium	Low
<i>Graduate will present a written thesis of their research</i>	Presents multiple and a wide range of resource types. Provides reliable sources that are current. Generally error free in regards to sentence structure, punctuation, capitalization, spelling, and standard usage. Consistent use of appropriate scientific terminology and concepts. Paper demonstrates a 90% or greater proficiency as scored by the BIOL 4430 Research Paper/Oral Defense Grading Outline	Provides a limited number of sources and types of resources; Some reliable sources; Some current sources.. Sentence structure, punctuation, capitalization, spelling, and standard usage errors are noticeable, but do not seriously impair readability. Partial use of appropriate scientific terminology and concepts. Paper demonstrates a 89- 75% proficiency as scored by the BIOL 4430 Research Paper/Oral Defense Grading Outline	One source (often personal knowledge or text only); Narrow range of resources; Unreliable sources; Out of date sources. Errors in sentence structure, punctuation, capitalization, spelling, and standard usage impair readability. Inaccurate use of scientific terminology and concepts. Paper demonstrates a proficiency of less than 75% as scored by the BIOL 4430 Research Paper/Oral Defense Grading Outline.
<i>Graduate orally defend their research project to the department</i>	Ideas are clearly presented; Ideas are presented in an appropriate order; Ideas are supported by information and logic; Appropriate conclusions are based upon evidence presented; Effective use of models, diagrams, charts, and graphs.	Main ideas are presented to some extent; Ideas are not presented in an order that adds clarity; Some ideas are supported by information and logic; Conclusions do not follow from ideas presented; Some appropriate use of models, diagrams, charts, and graphs.	No main idea presented; Ideas are presented in an order that distracts from clear communication; Ideas are not supported by information and are illogical; Inappropriate conclusions are presented No use of models, diagrams, charts, and graphs.
Grade			

Student: _____

Date: _____

Grade: _____ / 100 points

1. STRUCTURE- (___ / 10 points)

- Did the paper follow the MLA Style Manual.
 - [Title page](#)
 - [Page numbering and page header](#)
 - [Margins](#)
 - [Headings](#)
 - [Spacing](#)
 - [Indentation](#)
 - [Typeface](#)
 - [Quotations](#)
 - [Tables and figures](#)
 - [Citing References](#)
 -
- Did the writer use proper grammar/language?
- Was the paper organized for effective communications (table of contents, section heads, topics, subheads, etc.)?
- Did writer demonstrate effective use of graphics and tables?

2. ABSTRACT- (___ / 5 points)

- Nature of research is stated?
- Hypothesis is correctly stated?
- Methods are summarized?
- Results are summarized?
- Conclusions are summarized?

3. STUDIES AND FINDINGS- (___ / 20 points)

- Logically presents all findings of the study

4. CONCLUSIONS (___ / 5 points)

- Were conclusions presented clearly?

5. RECOMMENDATIONS FOR FUTURE STUDIES (5 points)

- Were recommendations presented clearly?

6. RESEARCH ABILITY/ SOURCES (15 points)

- From refereed, scientific publications that are current.

7. ORAL DEFENSE (15points)

- Did the student evidence understanding of the work presented?
- Main ideas are clearly presented?
- Ideas are presented in an appropriate order?
- Ideas are supported by information and logic?
- Appropriate conclusions are based upon evidence presented?
- Effective use of models, diagrams, charts, and graphs?
- Effectively answered questions by the audience?