

Biology Department Assessment of Program Learning Outcomes
MS in General biology
2015-2016

Learning Outcome:

PLO #1: Discuss major concepts and theories in biology.

Outcome Measures:

MS exam questions on description of major course topics (direct measure)

MS written version of thesis (direct measure)

Criteria for Success (if applicable):

100% of students will score at “developed” or higher on rubric

Longitudinal Data:

| Measure | % of students achieving “developed” or “highly developed” | | | |
|---------------------|---|---------------|---------------|---------------|
| | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 |
| MS exam questions | 100% (n=5) | 100% (n=3) | 100% (n=3) | 100% (n=2) |
| MS thesis (written) | 100% (n=2) | 100% (n=1) | 100% (n=3) | 100% (n=2) |

Conclusions Drawn from Data:

All graduating students are performing very well and meeting the criterion.

Changes to be Made Based on Data:

No changes to program. The intentional structure of the program to provide practice in building these skills coupled with close mentoring by faculty members during the thesis process results in these outcomes.

Rubric used:

Appendix A: Rubric for MS exam, Part II: Description of summer course major concepts – shaded rows

Appendix B: Rubric for MS thesis (written) – shaded row

APPENDIX A: Rubric for MS exam, Part II: Description of summer course major concepts (shaded rows)

| Summer course | Aspect of answer | Initial (fail) | Emerging (fail) | Developed (pass) | Highly Developed (pass) |
|---------------|--------------------------|-------------------------------|---|---|---|
| #1 | Choice of topic | Topic not addressed in course | Topic of minor importance in course | One of several main topics from course | Clearly a central topic from course |
| #1 | Topic description | Inaccurately described | Accurately described, with minimal/no use of vocabulary from the course | Accurately described, with some use of vocabulary from the course | Accurately described using appropriate vocabulary from the course |
| #2 | Choice of topic | Topic not addressed in course | Topic of minor importance in course | One of several main topics from course | Clearly a central topic from course |
| #2 | Topic description | Inaccurately described | Accurately described, with minimal/no use of vocabulary from the course | Accurately described, with some use of vocabulary from the course | Accurately described using appropriate vocabulary from the course |
| #3 | Choice of topic | Topic not addressed in course | Topic of minor importance in course | One of several main topics from course | Clearly a central topic from course |
| #3 | Topic description | Inaccurately described | Accurately described, with minimal/no use of vocabulary from the course | Accurately described, with some use of vocabulary from the course | Accurately described using appropriate vocabulary from the course |
| #4 | Choice of topic | Topic not addressed in course | Topic of minor importance in course | One of several main topics from course | Clearly a central topic from course |
| #4 | Topic description | Inaccurately described | Accurately described, with minimal/no use of vocabulary from the course | Accurately described, with some use of vocabulary from the course | Accurately described using appropriate vocabulary from the course |

Appendix B: Rubric for MS thesis (written) – selected row pertaining to PLO #1

| Component | Initial (70%) | Emerging (80%) | Developed (90%) | Highly Developed (100%) |
|---|---|---|---|--|
| Problem, question and/or hypothesis | <ul style="list-style-type: none"> • Fails to identify or summarize problem accurately • No indication of purpose of the research | <ul style="list-style-type: none"> • Summarizes the problem, though some aspects are incorrect or confusing • Some indication of purpose of the research | <ul style="list-style-type: none"> • Clearly identifies the problem • Clearly articulates the purpose of the research | <ul style="list-style-type: none"> • Clearly identifies the problem as well as nuanced aspects or key details • Clearly articulates the purpose of the research, beyond the narrow field |
| Choice of and use of relevant literature | <ul style="list-style-type: none"> • References not appropriately integrated into the paper | <ul style="list-style-type: none"> • Fewer than 35 references appropriately integrated into the paper | <ul style="list-style-type: none"> • 35-50 references appropriately integrated into the paper | <ul style="list-style-type: none"> • 50+ ref. appropriately integrated into paper |
| Knowledge of major biology theories | <ul style="list-style-type: none"> • Inadequate evidence of understanding of relevant biology concepts | <ul style="list-style-type: none"> • Basic evidence of understanding of relevant biology concepts | <ul style="list-style-type: none"> • Clear and adequate evidence of understanding of relevant biology concepts | <ul style="list-style-type: none"> • Clear and comprehensive evidence of understanding of relevant biology concepts |
| Methods (data collection/anal) | <ul style="list-style-type: none"> • No explanation or justification of research design • Methodology is unclear and incomplete | <ul style="list-style-type: none"> • Some explanation of research design, but no justification • Methodology is basic, but incomplete | <ul style="list-style-type: none"> • Clearly explains research design, but no justification • Explains methodology | <ul style="list-style-type: none"> • Clearly justifies and explains research design • Clearly explains methodology |
| Results | <ul style="list-style-type: none"> • Graphs and tables are poorly/inaccurately done • One or more pieces of data inaccurately interpreted in text with many opinion statements. | <ul style="list-style-type: none"> • Graphs and tables are inaccurate/missing labels with some errors • Usually accurately summarizes tables and graphs in text with obvious opinions | <ul style="list-style-type: none"> • Graphs and tables are adequate • Accurately summarizes the tables and graphs in text with some opinion | <ul style="list-style-type: none"> • Graphs and tables are professional • Accurately summarizes the tables and graphs in text w/o opinion |
| Conclusion(s) | <ul style="list-style-type: none"> • Fails to identify conclusions, or conclusion is a simplistic summary • Conclusion presented as “proof” | <ul style="list-style-type: none"> • Identifies conclusions and refers to some specific pieces of evidence • Does not relate conclusion to the broader field | <ul style="list-style-type: none"> • Clearly links evidence with the conclusion • Minimal consideration of limitations | <ul style="list-style-type: none"> • Clearly links evidence with the conclusion • Considers limitations of the study |