2022 – 23 Departmental Executive Summary

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| Course | N | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | % ≥ 6 | % ≥ 8 |
| BIO 288 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 67 | 67 |
| BIO 317 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 2 | 1 | 0 | 70 | 30 |
| PHYS 382 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 80 | 20 |
| Total | 21 | 0 | 0 | 0 | 0 | 2 | 2 | 5 | 2 | 3 | 3 | 2 | 71 | 38 |

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| **Department: Natural Sciences Date: May 24, 2023** |
| **Members involved with analysis of artifacts:** Kim Clark, Kregg Einspahr, Connie Callahan, Kyle Johnson, Jen Fruend, Raegan Skelton, Kristy Jurchen, John Jurchen, Brent Royuk, Rob Hermann |
| **See #1 Undergraduate Program Assessment Plan: Student Outcomes for:**  *a) Student Outcome; b) Background; c) Question(s); d) Methodology* |
| **Analysis of artifacts:**   1. ***PERFORMANCE CRITERIA****\* - How was data analyzed? (attach rubrics/scoring tools if used).*   Artifacts were analyzed according to the attached rubric. Rubrics were sent to the faculty beforehand for review, and the departmental faculty met together and scored the artifacts through discussion and consensus. |
| **Summary of RESULTS\*:**   1. *Restate the assessment question(s) (from the Assessment plan):*   Can students:   * 1. accurately explain scientific research   2. using effective and appropriate communication techniques to do so?  1. *Summarize the assessment results. (A narrative summary is required. Charts, tables or graphs are encouraged but optional.)*   A total of 21 artifacts were assessed from the following courses: BIO 288 Animal Behavior (Final Presentations), BIO 317 (Lab Reports), PHYS 382 (Final Lab Reports). Two additional classes – AGRI 215 and CHEM 325 were intended to be assessed but the artifacts were lost. The classes, number of artifacts (N), number receiving each score in the rubric, and the percentages achieving a score greater than 3, and the percentages achieving a score greater than 4 are shown in the table below, along with the aggregate values.   1. ***INTERPRETATION****\* - Discuss how the results answer the assessment question(s).*   Our goal was that at least 80% of students achieve a “moderately done” level represented by a 6 or above. We did not achieve that result in the aggregate, and only one class achieved it individually. Our aspirational goal was that 80% would achieve a score of 8 or above, representing satisfactory communication.  With few exceptions, students were able to accurately explain scientific research (point 1 in the question) as well or better than they could use effective and appropriate communication techniques to do so (point 2 in the question). That is, students seem generally to understand the scientific research so that they are able to explain what the research is saying, but they are unable to use good scientific communication techniques.  Many of the communication issues stemmed from a feeling that the work was rushed, even though the assessment artifacts were from major assignments that students should have spent considerable time on. Some examples of the rushed feeling were sloppy or unorganized writing on poster papers, or a failure to include a diagram when explaining a scientific experiment. These are issues that are emphasized in the class, but perhaps they were not as significant a part of the grade in previous assignments to make students aware of their importance. There was also a concern that many of the artifacts came from work due near the end of the semester and so students were too overloaded to spend the time necessary to produce quality work.   1. *Observations made that were not directly related to the question(s).* |
| **Sharing of Results:** *When were results shared? Date:* May 30, 2023  *How were the results shared? (i.e. met as a department)* Shared via email and made available on Teams.  *Who were results shared with? (List names):* Kim Clark, Kregg Einspahr, Connie Callahan, Kyle Johnson, Jen Fruend, Raegan Skelton, Kristy Jurchen, John Jurchen, Brent Royuk, Rob Hermann |

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| **Discussion of Results –Summarize your conclusions including:**   1. **ACTION\*-** *How will what the department learned from the assessment impact:*    1. *Teaching:* There was a recognition that course assignments tend to emphasize content and not the quality of the communication. Instructors will add an emphasis to their courses showing examples of effective scientific communication.    2. *Assignment/course*: Assignment requirements will included added emphasis on expectations for effective communication.    3. *Program:* We will look for more opportunities for students to produce professional-level communication.    4. *Assessment:* Some artifacts may change in the future. There is always a balance between the need to assess artifacts from late in the semester when students have mastered the course expectations, and the rushed quality to artifacts from the end of the semester. 2. **IMPACT\*-** *What is the anticipated impact of the* **ACTION\*** *on student achievement of the learning outcome in the next academic year?*   We anticipate that by giving more instruction and examples of quality communication, and adding more explicit expectations to assignments, the quality of the communication will improve   1. **BUDGET IMPLICATIONS** – *Indicate budget requirements necessary for the successful implementation of the*   **ACTION\*** None |
| ***If action is taken – it is recommended that the same learning outcome and assessment plan be used for a second assessment cycle.*** |
| ***What assessment questions related to the learning outcome would the program like to investigate in the***  ***future?*** Same as this year |
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| **Submitted by:** Robert Hermann **Reviewed by the Assessment Committee (date): 5/30/23** |
| **Department Chair notified approved/additional action needed: Approved 5/30/23**  **BUDGET IMPLICATIONS – Assessment Committee Chair notified appropriate Dean: na** |

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| **Natural Sciences Department Program Assessment** | | | | |
| *Learning Goal Assessed:* Communication: to demonstrate effective communication skills for the presentation of scientific research | | | | |
| *Student Outcome Assessed*: Students will be able to communicate concepts, processes and results in  scientifically appropriate ways. | | | | |
| Semester: | |  | | |
| Course: | |  | | |
| Artifact Assessed: | |  | | |
| Rubric | Student outcomes [(1) accurately explained scientific research, and (2) used effective and appropriate communication techniques to do so] will be assessed using the Likert scale  below: | | | |
| For each outcome (1) and (2):   1. – not satisfactory (significant errors, ineffective or inappropriate communication) 2. –minimally done (significant errors) 3. –moderately done (several errors or concerns) 4. –satisfactory, some minor errors or concerns 5. –very well done | | | | |
| Artifacts | Outcome 1 | Outcome 2 | Total | Comments |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |
| 7 |  |  |  |  |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |
| 11 |  |  |  |  |
| 12 |  |  |  |  |
| Summary |  |  |  |  |
| Comments: | | | | |