2022 ‒ 23 & 2023 - 24 General Education Executive Summary

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| Class | N | 1 | 2 | 3 | 4 | 5 | % ≥ 3 | % ≥ 4 |
| AGRI 102 | 10 | 0 | 1 | 4 | 4 | 1 | 90 | 50 |
| Bio 110 | 7 | 0 | 1 | 2 | 4 | 0 | 86 | 57 |
| Sci 202 | 10 | 0 | 2 | 1 | 4 | 3 | 80 | 70 |
| Sci 331 | 8 | 0 | 1 | 2 | 3 | 2 | 88 | 63 |
| Sci 365 | 11 | 0 | 0 | 6 | 4 | 1 | 100 | 45 |
| Aggregate | 46 | 0 | 5 | 15 | 19 | 7 | 89 | 57 |

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| **Department:** Department of Natural Sciences **Date:** May 22, 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 General Education Assessment Plan for:**  a) Learning 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):*  (1) Can students accurately explain scientific ideas?(2) Can students use 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*.   The department analyzed 46 total artifacts from 5 courses (AGRI 102 (10 weekly reports), Bio 110 (7 final PPTs), Sci 202 (10 pages from final exam), Sci 331 (8 project papers), Sci 365 (11 journal reviews)). The table below shows the course, the number (N) of artifacts assessed, the number of artifacts achieving various scores, and the percentage of artifacts achieving a score of at least a 3, and the percentage achieving a score of at least a 4.   1. ***INTERPRETATION****\* - Discuss how the results answer the assessment question(s).*   Overall the department succeeded in its goal of having 80% of students achieve a score of 3 or better, but we did not attain our aspirational goal of having 80% achieve a score of 4 or better. Every course individually met the basic standard, but none met the aspirational standard. The fact that students had some difficulty with quality communication is not a surprise to the department, as last year our general education assessment found that students had a good understanding of material, but were unable to communicate it clearly and completely.  We found that students had an acceptable mastery of the mechanics of communication in most cases – they were able to communicate – but what was missing was an ability to communicate information. That is, they could say or write things without errors, but they didn’t necessarily say much in their communication. Students routinely missed large sections of the content they were supposed to communicate – either key parts of concepts, or enough detail to show logical connection and flow through an explanation.  The department determined that we need to spend more time and energy giving students instruction on what constitutes effective and complete communication. We realized that we give a lot of time and focus on ensuring students know content and how to align their work with the assignment, but we do not give enough instruction on how to effectively communicate core ideas.   1. *Observations made that were not directly related to the question(s).* (*i.e. interrater reliability of the scoring tool was low*) We enjoyed seeing the assignments that other faculty gave in their science courses, as it gave us ideas for what we could do in our own. |

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| **Sharing of Results:** *When were results shared? Date*: May 31, 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 |
| **Discussion of Results ‒Summarize your conclusions including:**   1. **ACTION\*-** *How will what the department learned from the assessment impact:*    1. *Teaching:* We will spend time in general education classes teaching students how to effectively communicate their ideas – beyond the mechanics of writing, how one fully explains the key ideas and the logical connections that connect the ideas.    2. *Assignment/course*: Some assignments will be modified to include more emphasis on effective and complete communication.    3. *Program:* Communication is one of the key learning outcomes for the department; we will evaluate how we ensure that students are able to communicate science effectively.    4. *Assessment:* We may change some of the artifacts that we choose to collect next time. 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 being more explicit with students that we are expecting full, effective communication, and providing instruction on it, we may be able to approach our aspiration of having 80% or more of students able to demonstrate effective communication. 3. **BUDGET IMPLICATIONS** ‒ *Indicate budget requirements necessary for the successful implementation of the* **ACTION\*** (i.e. an additional staff person, new equipment, additional sections of a course).   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?*** Since we just started assessing this question and have work to do to achieve our goal, we anticipate investigating the same question. |
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| **Submitted by:** Robert Hermann **Assessment Committee Reviewed:** 5/30/23. |
| **Department Chair notified ‒ approval/additional action needed: Approved 5/30/23** |

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| **BUDGET IMPLICATIONS ‒ Assessment Committee Chair notified appropriate Dean: None** |

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| **Natural Sciences Department General Education Assessment** | | | | | | |
| Learning Goal Assessed: Communication: Students can communicate scientific topics in a manner appropriate to an informed layperson. | | | | | | |
| Student Outcome Assessed: Can students use effective communication techniques to accurately  explain scientific ideas? | | | | | | |
| Semester: | |  | | | | |
| Course: | |  | | | | |
| Artifact Assessed: | |  | | | | |
| Rubric | Student outcomes [(1) accurately explained scientific ideas, and (2) used effective and appropriate communication techniques to do so] will be assessed using the Likert scale  below: | | | | | |
| 1. – neither satisfactory (significant errors, ineffective or inappropriate communication) 2. – both minimally done, or one satisfactory (minor errors) and one unsatisfactory (significant errors) 3. – both present: one poorly done and one well done, or both moderately done (several errors or concerns) 4. – both satisfactory, some minor errors or concerns 5. – both very well done | | | | | | |
| Artifacts | 1 | 2 | 3 | 4 | 5 | Comments |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |
| Summary | 1 | 3 | 8 | 7 | 8 |  |
| Comments: | | | | | | |