

CNM ANNUAL STUDENT LEARNING ASSESSMENT REPORT

Due to the Student Academic Assessment Committee by October 15



PART 1: REPORT INFORMATION

Report Year and Contact Information			
<u>2018-2019</u> Academic Year	<u>Susan Johnson, Karen Riley</u> Contact Person	<u>sjohnson@cnm.edu, kstrunk@cnm.edu</u> CNM Email	<u>Ext50102, Ext50928</u> CNM Office Extension
Subject of this Report			
MSE--PHLTHSCI_AA--Pre-Health Science Degree			

PART 2: CONTEXT IN WHICH THE ASSESSMENT TOOK PLACE

Program/Area Highlights and Successes
<p>(Wherever applicable, include course completion rates, job placement outcomes, and licensing examination pass rates. See the program information dashboard at https://livecnm.sharepoint.com/sites/Dashboards/SitePages/Program%20Information%20Dashboard.aspx (access restricted to CNM employees) and other reports at https://www.cnm.edu/depts/opie.)</p> <p>Bio 1492 students continue to demonstrate a high level of success with outcomes PHS3 (95%) and PHS7 (84%). Bio 2192 students met or exceeded expectations for outcome PH1 (84% and 76%), which was similar to data collected for these outcomes in the previous year. For the 2018-2019 academic year, the question used to assess outcome PHS3 was new in Bio 2192. For Bio 2192, during the Fall 2018 semester 133/263 met the target, this only represents 50% of students and was much lower than expected. This likely was a result of the format of the question. In the spring 2019 semester faculty modified the assessment question in order to clarify the format of the question to students. Using the modified question in the Spring 2019 semester 167/244 met the target, this represents 68% of students. Which still falls short of mastery, but does show improvement suggesting that altering the question did impact student success.</p>
Changes Implemented During the Past Year in Support of Student Learning
<p>In Bio 2192 one section of the Bio 2192 midterm was re written to address PHS3. The new question asked students to analyze results from multiple (MAC, TSI, and sucrose tests) carbohydrate media used during the lab midterm exam. This interpretation of a data set was a more complex task than the interpretation of a single media (TSA blood culture) that was assessed on the midterm for PH3 last year, so it is not completely unexpected that the students did not do as well. As stated above, the midterm question was modified when only 50% of students met the target. The modified question used in the spring had better success with 68% of students meeting the target, but still fell short of the 70% goal. It is likely that further modification of the question might result in increased success.</p>

PART 3: REPORT ON ASSESSMENT OF STUDENT LEARNING

Assessment Method	Type of Assessment Tool	Population or Course(s) Assessed	Graduate Learning Outcome(s) Assessed	Mastery Level (E.g., "Minimum score of 3 on a rubric scaled 0-4" or "Minimum score of 75%")	Targeted % Achieving Mastery	Outcome
Final Exam	Direct & Internal	Bio1492	PHS3: Be able to generate and interpret a variety of graphs and/or data sets.	Correct response	70%	Target met
Final Exam	Direct & Internal	Bio 1492	PHS7: Properly operate laboratory equipment to collect relevant and quality data.	Correct response	70%	Target met
Midterm	Direct & Internal	Bio 2192	PHS3: Be able to generate and interpret a variety of graphs and/or data sets.	Correct response	70%	Target not met
Final Exam	Direct & Internal	Bio 2192	PHS1: Communicate clearly, concisely, and with purpose in oral and written form.	Correct response	70%	Target met
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Summary of Assessment Findings

Bio 1492:

PHS3: Be able to interpret a variety of graphs and data sets: The data was collected from a question included on the final exam asked students to identify the correct answer by interpreting a graph. Correct responses = 1,062 (95%), n=1,114

PHS7: Properly operate laboratory equipment to collect relevant and quality data. The data was collected from a question on the final exam required students to correctly use a microscope in order to identify a stage of the cell cycle. Correct responses = 937 (84%), n=1,114

Bio 2192:

PHS1: Communicate clearly, concisely, and with purpose in oral and written form. The data was collected from a formal written scientific paper students wrote using data the student collected experimentally.

1) Unknown final report introduction (70% minimum score) = 220 (84%), n=263. Data from the introduction was only collected during the Fall 2018 semester.

2) Unknown final report discussion (70% minimum score) = 365 (76%), n=482. Data from the discussion was collected during both the Fall 2018 and Spring 2019 semesters.

PHS3: Be able to interpret a variety of graphs and data sets. The data was collected from a question on the midterm exam that had multiple parts for the student to answer by interpreting three inoculated media (MacConkey, TSI, and sucrose) provided.

1) Taken collectively from both the Fall 2018 and Spring 2019 semesters = 300 (59%), n=507.

2) When separated by semester:

Fall 2018 = 133 (50%), n=263

Spring 2019 =167 (68%), n=244

Interpretation of Assessment Findings

For Bio 1492 the target was met for both degree outcomes assessed for the 2018-2019 academic year and likely reflects the changes made to the Bio 1492 lab manual. For Bio 2192 the target was met for the PHS1 degree outcome, but not for PHS3. The question used in Bio 2192 for PHS3 was new. After analyzing the data from the Fall 2018 semester it was determined that the format of the question was confusing for the students, so the question format was modified for the Spring 2019 semester. With the modified question, we observed improvement in students successfully answering the question. It is not unexpected that the data collected for PHS3 for Bio 2192 is lower than what was observed for Bio1492, because the task of interpreting multiple pieces of data is a more complex than interpreting a single graph. This corroborates what has been observed in previous years with students having a difficult time with complex data analysis.

Action Plan in Support of Student Learning (Describe changes to be made that are based at least in part on the assessment interpretation. If the assessment did not yield useful information, describe changes to be made in the assessment methodology and/or criteria.)

With the change from a 5 to a 6 year cycle plan, the questions used for assessment this year will not be further modified. Instructors are communicating with each other on ways to emphasize the concepts of data analysis in lab classes, in order to better support student learning for the upcoming new cycle plan. Faculty have also developed additional assessment questions to be used to assess degree outcomes for both microbiology (Bio 2192 = Biol 2310L) and introductory biology for health science majors lab (Bio 1492 = Biol 1140L).

Please select all of the following that characterize the types of changes described in the above action plan:

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|--|---|---|
| <input checked="" type="checkbox"/> Assessment criteria revision | <input checked="" type="checkbox"/> Assessment methodology revision | <input checked="" type="checkbox"/> Assignment revision |
| <input type="checkbox"/> Budgetary reallocation | <input type="checkbox"/> Change in teaching approach | <input type="checkbox"/> Course content revision |
| <input type="checkbox"/> Curricular Revision | <input type="checkbox"/> Faculty training/development | <input type="checkbox"/> Process revision |

Recommendations, Proposals, and/or Funding Requests	Budget Needed
N/A	Click or tap here to enter text.

PART 4: REMAINING YEARS IN CURRENT ASSESSMENT CYCLE PLAN (including any revisions) – **OR -- UPCOMING ASSESSMENT CYCLE PLAN** (if this was the final year)

Years of Full Cycle	Next Year's Assessment Focus (Describe how the next planned assessment is expected to provide information that can be used toward improving student learning.)
Fall 2019-Spring 2025	For the Pre-Health Science degree (PHS) outcomes will be assessed in the following courses: Bio 1492 = Biol 1140L, Bio 2192 = Biol 2310L, Bio 2710 = Biol 2510, and Bio 2711 = Biol 2520. Assessment methods for this cycle include common questions included on either a midterm or final exam, evaluation of a final paper based on collection of data by the student, or use of a case study. For the Fall 2019-Spring 2020, Fall 2020-Spring 2021 terms PHS 1, will be assessed in Biol 2310L, while PHS 2 and 4 will be assessed in Biol 1140L. For the Fall 2021-Spring 2022, Fall 2022-Spring 2023 terms PHS 5 and 6 will be assessed in Biol 2310L. For the Fall2023-Spring 2024, Fall 2024-Spring 2025 terms PHS 3 and 7 in Biol 1140L, while PHS 8 will be assessed in Biol 2510 and Biol 2520. This assessment cycle will have data collected from Biol 2510 and Biol 2520, which represents a change from the previous assessment cycle.

Graduate Learning Outcomes to Be Assessed	Years in which Assessment Is Planned	Population/Courses to Be Assessed	Planned Assessment Approach
1. Communicate clearly, concisely, and with purpose in oral and written form	Fall 2019-Spring 2020 Fall 2020-Spring 2021	Bio 2192 = Biol 2310L	Final lab report, Introduction. Final Lab report, Discussion of data from Gram positive and negative results.
2. Demonstrate computational skills with and without the use of technology	Fall 2019-Spring 2020 Fall 2020-Spring 2021	Bio 1492 = Biol 1140L	Final Exam: cell size determination (with technology) Final Exam: metric stairs (without technology).
3. Be able to generate and interpret a variety of graphs and/or data sets.	Fall 2023-Spring 2024 Fall 2024-Spring 2025	Bio 1492 = Biol 1140L	Catalase graph on final exam (interpret) Midterm graph (generate)
4. Demonstrate problem solving skills within the context of mathematical	Fall 2019-Spring 2020 Fall 2020-Spring 2021	Bio 1492 = Biol 1140L	Final Exam: Cell size determination.
5. Employ critical thinking skills to judge the validity of information from a scientific perspective.	Fall 2021-Spring 2022 Fall 2022-Spring 2023	BIO 2192= BIOL 2310L	Midterm lab exam, Station 4
6. Apply the scientific method to formulate questions, analyze information/data, and draw conclusions	Fall 2021-Spring 2022 Fall 2022-Spring 2023	BIO 2192= BIOL 2310L	Final lab report, Discussion of results from collecting data from Gram positive and negative bacterial experiments.
7. Properly operate laboratory equipment to collect relevant and quality data	Fall 2023-Spring 2024 Fall 2024-Spring 2025	Bio 1492 = Biol 1140L	Catalase experiment, data collection
8. Analyze relevant issues utilizing concepts and evidence from the social/behavioral sciences	Fall 2023-Spring 2024 Fall 2024-Spring 2025	Bio 2710 = Biol 2510 Bio 2711 = Biol 2520	Patho case study or final exam question
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