

2023-2024 Biology Annual Assessment Report

Bachelor Biology

Mission

The Biology and Chemistry Department believes that every student deserves a first-class education. We are educators at Fitchburg State because our personal values align with the campus values of equity and excellence. We strive to ensure that our students have the best of what we can offer them as they gain an in-depth knowledge of science that is part of a larger interdisciplinary, multicultural liberal arts and sciences education. And to develop ethical practices in the field

Academic Year 2023-2024

Bachelor Biology Learning Outcomes

Demonstrate Content knowledge of the AAAS BioCore with topics in:

Evolution;
 Transformations of Energy and Matter;
 Information Flow, Exchange and Storage;
 Structure and Function;
 Systems

MEASURES	RESULTS	ACTIONS
<p>Assessment pre-test in BIOL 1800/1900 and post-test in capstone course</p> <p>Students take a quiz with questions that are mapped to the AAAS BioCore content areas (Evolution, Transformations of Energy and Matter, Information Flow, Exchange and Storage, Structure and Function Systems).</p> <p>Direct - Assignment</p> <p><i>General Biology I: BIOL 1800</i></p> <p>Target</p> <p>Proficient: at least 75% correct on every post-test question, OR at least 50% correct with improvement of at least 25% from the pre-test.</p> <p>Sufficient: scores of 50-75% provided there was improvement (5-25%) from the pre-test.</p> <p>NEW Biology Assessment TEST 2019.docx</p>	<p>NOT MET</p> <p>Assessment Test Results 2024.xlsx</p> <p>Analysis</p>	<p>Revise Measurement / Assessment</p> <p>Not Started</p> <p>Compare our current test of content knowledge with Couch et al 2019 Biology content knowledge assessment.</p>

Conduct original biological research.

Clearly articulate testable questions and hypotheses;
 Design and execute experiments;
 Analyze data using appropriate statistical methods;
 Summarize data concisely with graphs, tables or images;
 Draw appropriate conclusions;
 Demonstrate safe practices in laboratory and field

MEASURES	RESULTS	ACTIONS
<p>Capstone Assessment</p> <p>Direct - Presentation</p> <p><i>Cell Culture Techniques: BIOL 3350</i></p> <p>Target</p> <p>A majority of students (>66%) demonstrate sufficiency (score of 2 or above).</p>	<p>MET</p> <p>Biology Capstone Assessment Fall 2024 (Responses).xlsx</p> <p>Analysis</p> <p>Student oral and poster presentations were assessed by one to three faculty at the Fitchburg State University Undergraduate Conference. Research was primarily</p>	<p>Gather Additional Data</p> <p>Not Started</p> <p>Continue assessment</p>

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<p>Biology_Capstone Skills Rubric 2020.docx</p>	<p>conducted in the Molecular Biology capstone course or the Moderna Scholars program. Several presentations were from faculty guided independent study projects. 100% of students were assessed as sufficient or proficient for 2A. Clearly articulate testable questions and hypotheses and for 2B. Design and execute experiments. 94% of students were assessed as sufficient or proficient for 2C-1. Summarize results concisely with graphs, tables or images.</p>	
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Communicate science orally and in writing.

- Present information in a clear and organized manner;
- Write well-organized and concise reports in a scientifically appropriate style;
- Use relevant technology in communications.;
- Communicate to a general audience;

MEASURES	RESULTS	ACTIONS
<p>Capstone assessment of presentation</p> <p>Students complete a poster, oral presentation, or a lab report. Members of the Assessment Committee will evaluate criteria based on a rubric adopted by the department in 2020. The generic rubric will be adapted for each assignment with the help of the course instructor, to guide the Assessment Committee in scoring.</p> <p>Direct - Presentation</p> <p>Target</p> <p>66% of the students will achieve a score of Sufficient (2) or above.</p> <p>LO3.docx</p>	<p>MET</p> <p>Biology_Capstone Assessment Fall 2024 (Responses).xlsx</p> <p>Analysis</p> <p>Student oral and poster presentations were assessed by one to three faculty at the Fitchburg State University Undergraduate Conference Spring 2024. Research was primarily conducted in the Molecular Biology capstone course or the Moderna Scholars program. 100% of students were assessed as sufficient or proficient for 3B. Present information in a clear and organized manner (Oral presentation or Poster). 88% of students were assessed as sufficient or proficient for 3D. Communicate to a general audience. At the spring departmental retreat 5/16/2024 faculty discussed the challenge of presenting technical details to a general audience. Do we teach students to be able to communicate to a general audience? Should we split this learning outcome to include broader audience vs discipline specific? Perhaps revise this learning outcome to assess broader context of the research project: why are we doing this, what would you do next, why this research matters?</p>	<p>Restructure Outcome Statement Not Started</p> <p>Restructure outcome statement.</p>

Use scientific literature.

- Retrieve information efficiently and effectively by searching the biological literature;
- Evaluate scientific articles critically;
- Cite sources appropriately

MEASURES	RESULTS	ACTIONS
<p>Capstone assessment of presentation</p> <p>Students complete a poster, oral presentation, or a lab report. Members of the Assessment Committee will evaluate criteria based on a rubric adopted by the department in 2020. The generic rubric will be adapted for each assignment with the help of the</p>	<p><i>No results have been added.</i></p>	<p><i>No actions have been added.</i></p>

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course instructor, to guide the Assessment Committee in scoring.

Direct - Presentation

Target

66% of the students will achieve a score of Sufficient (2) or above.

[LO4 Use scientific literature.docx](#)