

WSU B.S. in Biological Sciences 2021-2022 Assessment Plan

Mission Statement

The mission of the Bachelor of Science in Biological Sciences is to deepen students' knowledge of life sciences in one or more subdisciplines of biology (molecular, cellular, physiological, ecological). The program prepares students for biology-related employment at private, non-profit, governmental, or academic organizations, or for graduate or professional schools. The program includes courses in theoretical and applied biology, highlighting training in laboratory methodology and science-related oral and written communication skills as well as research opportunities for undergraduates.

B.S. in Biological Sciences Program Outcomes

Students successfully completing the WSU B.S. in Biological Sciences should be able to:

1. Apply the process of science to understanding experimental observations and predicting outcomes.
2. Interpret quantitative data that addresses biological questions.
3. Explain how biological concepts may be used to address social and/or environmental problems.
4. Explain scientific ideas and the results of scientific research effectively and concisely in written or oral form.
5. Conduct experiments using common lab or field techniques.

2021-2022 Assessment Learning Outcomes

The learning outcomes for the B.S. in Biological Sciences are currently being revised. As we transition to the new learning outcomes (listed above), the following assessments will be completed for the 2021-2022 academic year:

1. Students will demonstrate mastery of science communication through writing in the biological sciences.
2. Students will successfully conduct experiments using common lab or field techniques.

Assessment 1 – Mastery of written science communication

Learning Outcome

Students will demonstrate mastery of science communication through writing in the biological sciences.

Data Sources

The undergraduate programs in Biological Sciences require that students successfully complete one of three writing intensive courses, in which they complete multiple writing assignments and

drafts designed to encourage students to read and understand the primary literature in biology and to communicate this information in writing. The three writing intensive courses (BIO 4110: Biomedical Technology and Molecular Biology, BIO 4120: Comparative Physiology, and BIO 4130: General Ecology) each require a final term paper assignment that is graded using a common rubric (see attached file). Data for this assessment will include the grade distributions based on the points awarded to each student for each of the three courses offered during the assessment period.

Data Gathering and Timeline

Final rubric scores for the term paper assignment will be collected from the three writing intensive courses offered during the assessment period.

Data Evaluation

Combining the data from the three writing intensive courses, the number of students earning at least 80% of the rubric points (58 of 70 points) will be tabulated, and the percent of students meeting this minimum criterion for this learning outcome will be reported.

Criteria for Acceptable Performance

A minimum of 80% of students completing their BS degree in Biological Sciences will earn a minimum of 80% of the rubric points for the final term paper assignment.

Assessment 2 – Successfully conduct experiments

Learning Outcome

Students will successfully conduct experiments using common lab or field techniques.

Data Sources

The undergraduate programs in Biological Sciences require that students complete courses with laboratories at both introductory and advanced levels. All students completing their BS in Biological Sciences are required to take a two-course introductory sequence (BIO 1500 and 1510) that include a complimentary laboratory (BIO 1501 and 1511). Upper-level course with a laboratory is also required, but the students are able to choose from a wider variety of courses to satisfy this requirement. Ideally, program assessment for this learning outcome should occur at both introductory and advanced levels. For the 2021-22 assessment, we will limit our analysis to the BIO 1511 course. Data for this assessment will include grades for a lab report required of all students in the course that summarizes the carrying out of an experiment in the laboratory.

Data Gathering and Timeline

Final scores for the lab report will be collected from all students for the fall and winter terms during which the course was offered during the assessment period.

Data Evaluation

Combining the data from both terms, the number of students scoring at least 70% on the lab report will be tabulated, and the percent of students meeting this minimum criterion for this learning outcome will be reported.

Criteria for Acceptable Performance

A minimum of 80% of students completing their BS degree in Biological Sciences will earn a score of 70% on the lab report.

Writing Intensive Courses Term Paper Grading Rubric for BS in Biological Sciences

Pts.	Section	A	B	C	D or F	Article #*
___ of 10	Introduction	clear, well organized, describes significance, sets up the paper well, introduces scientific progression well, professional tone	fairly clear, okay organization, some significance, partially sets up paper, acceptable introduction to scientific progression, acceptable tone	excess reader time needed, weak organization, weak significance, weakly sets up paper, weak introduction to scientific progression, unprofessional tone	not at all clear, poor organization, poor/no significance, poor/no set-up of paper, poor/no introduction to scientific progression, unprofessional tone	
___ of 5	Articles: purpose	clear, convincing	somewhat clear, somewhat convincing	weak clarity, weakly convincing	not clear, absent or unconvincing	1 2 3 4 1 2 3 4
___ of 10	Articles: approach	clear, flow from purpose	somewhat clear, some flow from purpose	marginally clear, weak flow from purpose	not clear or absent, no link to purpose	1 2 3 4 1 2 3 4
___ of 10	Articles: results	clear, explain results well, flow from purpose & approach	somewhat clear, acceptable results, flow somewhat from purpose & approach	excess reader time needed, weak results, flow weakly from purpose & approach	not clear, poor/no results, poor flow from purpose & approach	1 2 3 4 1 2 3 4 1 2 3 4
___ of 10	Articles: conclusions	clear, strong conclusions, flow logically from results	somewhat clear, acceptable conclusions, flow somewhat logically from results	excess reader time needed, weak conclusions, flow weakly from results	not clear, poor/no conclusions, flow poorly from results	1 2 3 4 1 2 3 4 1 2 3 4
___ of 15	Transitions	clear, connect articles well, logical	somewhat clear, connect articles oaky, somewhat logical	excess reader time needed, weak article connections, weak logical flow	not clear, poor/no connections, poor logical flow	1 2 3 4 1 2 3 4 1 2 3 4
___ of 5	Paper Conclusion	clear, summarizes findings, good significance, good overview of scientific progress	somewhat clear, acceptable summary, acceptable significance, acceptable overview of scientific progress	excess reader time needed, weak summary, weak significance, weak overview of scientific progress	not clear, poor/no summary, poor/no significance, poor/no overview of scientific progress	
___ of 5	Overall	pleasure to read, well organized, correct citations, <2 spelling & grammar errors	acceptable to read, acceptable organization, acceptable citations, few spelling & grammar errors	effort to read, weak organization, weak citations, 4-5 spelling & grammar errors	hard to read, poor organization, citations incomplete excessive spelling & grammar errors	