

# WSU B.S. in Biological Sciences 2020-2021 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.

## **2020-2021 Assessment Learning Outcomes**

The learning outcomes for the B.A. 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 2020-2021 academic year:

1. Students will demonstrate an understanding of the core concept of evolution.
2. Students will demonstrate mastery of science communication through writing in the biological sciences.

## **Assessment 1 – Understanding of the core concept of evolution**

### **Learning Outcome**

Students will demonstrate an understanding of the core concept of evolution.

### **Data Sources**

Student final grades from BIO 4200 (Evolution), the current capstone course in the BS degree, will be used as an assessment tool for the 2020-21 assessment year. Future assessments will

utilize specific questions from this and other courses as assessment tools to examine students' understanding of the core concept of evolution.

### **Data Gathering and Timeline**

Final grades from Spring/Summer 2020, Fall 2020, and Winter 2021 will be utilized for this assessment.

### **Data Evaluation**

Combining the data from the three semesters of the assessment period, the number of students earning a letter grade of "B-" or higher will be tabulated, and the percent of students meeting this minimum criteria for this learning outcome will be reported.

### **Criteria for Acceptable Performance**

A minimum of 75% of students completing their BS degree in Biological Sciences will earn a minimum letter grade of "B –" in the capstone Evolution course.

## **Assessment 2 – 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 letter grade of "B –" in the capstone Evolution course.

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

Pts.	Section	A	B	C	D or F	Article #*
___ of 10	<b>Introduction</b>	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	<b>Articles: purpose</b>	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	<b>Articles: approach</b>	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	<b>Articles: results</b>	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	<b>Articles: conclusions</b>	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	<b>Transitions</b>	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	<b>Paper Conclusion</b>	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	<b>Overall</b>	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	